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Hierarchy and compromise in English and German municipal development projects

Abstract

This paper draws on over 30 fieldwork interviews to compare the governance of urban development projects in the “twin towns” of Newcastle (England) and Gelsenkirchen (Germany). It finds that Gelsenkirchen has been able to adopt a more hierarchical approach to stipulating the sustainability criteria of new developments, whereas Newcastle has had to work more closely with other partners and seek greater compromises in building design.

These different approaches map on to the characteristic “policy styles” associated with England and Germany (Richardson, 1982) and are shaped by the different institutional contexts within which local government operates in each context (Type II and Type I multi-level governance respectively (Hooghe and Marks, 2003)). Various different organisations have had some responsibility for Science Central, the development project in Newcastle, which means the council has to work horizontally to have the capacity to implement its policy objectives. In contrast, Gelsenkirchen has kept the management of its Ebertstraße redevelopment in-house and thereby been able to exercise hierarchical authority over the project to ensure it contains ambitious sustainability features.

Introduction

The idea that states require input and support from a range of other actors in order to achieve their objectives is central to the idea of “governance” and the notion that governments are no longer able to govern alone – if indeed they ever could (Rhodes, 1997). Heritier and Lehmkuhl (2011) characterise the inclusion of private actors in decision-making as a “new mode” of public policy, and argue that it is a logical consequence of the process of state retreat that has occurred across the developed world since the 1970s (see also Mayntz, 2009). In addition, the “wicked” nature of environmental challenges, or indeed issues such as teenage pregnancy, obesity or smoking, has required governments to work together with other societal actors in order to try and achieve policy objectives (Rittel and Webber, 1973; Nilsson *et al.*, 2009). Wicked issues defy resolution “because of the enormous interdependencies, uncertainties, circularities, and conflicting stakeholders implicated by any effort to develop a solution” (Lazarus, 2009, p1157). These stakeholders may have significantly different perspectives on how to solve specific problems, or what the key concern may be, or may even disagree as to whether addressing it would be desirable. Yet they must be incorporated into the process if the policy is to have any degree of success. Any attempt to reduce pollution, for example, requires polluters to change their behaviour.

Climate change is an even more complex issue, because its direct relevance to the vast majority of human activities means that it encompasses a range of other social, economic and development issues (Bodansky, 2006). As Grunow (2003) has identified, this means that individuals across the world have become *subjects* as well as *objects* in public policy, because their everyday actions have implications for the rest of humanity. However, key stakeholders often disagree about the best way to reduce fossil fuel consumption, perhaps because they are reluctant to change their behaviour or they view a particular policy as being inimical to their interests. Furthermore, state and non-institutions need to act at all levels – from the global to the very local – in order to achieve this. There are many examples of subnational governments influencing national policy, as well as national perspectives cascading down to state and municipal administrations (Bechtel and Urpelainen, 2014). As such, climate change policy needs to embrace the idea of “multi-level” or “multi-tiered” governance (the notion that governance “happens” within local, regional, national and international jurisdictions).

Thus far, greenhouse gas emissions increase unabated because governments, businesses and private citizens have been unable or unwilling to agree on (and implement) approaches to reverse their growth.

Therefore, it is clear that climate change is not a “typical” policy issue. Any attempt to address it will be disruptive and is likely to put pressure on existing systems and cause them to change. This paper, which provides the basis for one chapter of the author’s doctoral thesis, investigates whether municipalities in England and Germany – the twin towns of Newcastle and Gelsenkirchen – have adopted different policy approaches and structural arrangements in order to try and address climate change through their planning policies. It begins by sketching out the “traditional” regulatory policy styles of each country (Richardson, 1982), and then characterising their institutional design using Hooghe and Marks’ (2003) typology of multi-level governance. The paper then maps the development of planning policy in both cities against this theoretical framework and highlights how governance approaches may be shifting. Since Germany relies more heavily on traditional “government” compared to England and a range of stakeholders need to be involved to address climate change, it might be expected that Gelsenkirchen has had to change its *modus operandi* more than Newcastle. Alternatively, it may be the case that Newcastle’s governance arrangements have led to a lack of policy co-ordination and institutional capacity, which has caused the city to take a more hierarchical approach than might otherwise be expected.

Case selection and methodology

The political science literature on policy styles and institutional structures focuses overwhelmingly on the national and international scales, despite the fact that many scholars recognise the crucial role that municipalities need to play in climate mitigation (Bulkeley and Betsill, 2005; World Bank, 2010). My focus on the city therefore fills an important gap in the literature and facilitates a greater understanding of the way in which public authorities are evolving in response to this vital issue.

The twin towns of Newcastle and Gelsenkirchen represent similar case studies, since they have both been recognised for their efforts in recovering from the decline of heavy industry (particularly coal-mining) and re-branding themselves as forward-looking, sustainable cities that rely on service industries, science and technology. The cities are also very similar in size and both municipalities have suffered serious financial difficulties in recent years, due primarily to reductions in central grant funding for Newcastle and a fall in revenue from business taxes in Gelsenkirchen. By adopting a “most similar systems design” approach and focusing on a challenging and dynamic policy sector, the investigation increases the possibility of identifying whether an issue such as climate change results in different governing solutions at the local level.

Planning is often viewed as a policy sector over which local government has retained significant autonomy (Bulkeley and Betsill, 2003). It relies heavily on regulation and legal processes as a way of ensuring that local authorities are seen to treat every application on its own merits. As such, we might expect councils to assert their position more readily and rely on more hierarchical modes of governing when taking planning decisions, particularly when compared to climate change strategy for example. Similarly, planning decisions could reflect the political nature of the local councils, since regional, *Land* and national actors have relatively limited influence. Furthermore, planning procedures in England and Germany are very similar, both in terms of the type of developments that require permission and the potential appeals processes that are available (Heidenreich, 2008). In this way, planning policy represents a useful policy sector for comparative analysis, particularly in terms of whether local governments are able to rely more on traditional *government* tools when compared to climate change strategy, for example.

The paper focuses in particular on two comparable development projects: the complete refurbishment of the Hans-Sachs-Haus and the adjacent public square (Heinrich-König-Platz) in Gelsenkirchen (which is henceforth termed the Ebertstraße redevelopment); and the construction of the Core Building and regeneration of the wider Science Central site in Newcastle. Both projects are located in “brownfield” city centre sites, and both councils view them as a highly symbolic developments that seek to convey the message that they are forward-thinking and sustainable locations. The Hans-Sachs-Haus refurbishment was completed in August 2013 and the Gateway Building was opened in September 2014, although further construction work is still being undertaken around both sites at the time of writing. Each building was designed and developed to be used by the respective local authority, and as such the municipalities were heavily involved in decision-making processes. Indeed, in both cases local authority staff now occupy the finished buildings: Gelsenkirchen’s council chamber and 300 municipal employees are based in the Hans-Sachs-Haus, and various Newcastle departments are located in the Core Building. This means that, in contrast to private sector planning applications (for new private homes, supermarkets, office blocks or factories, for example), the local authority would not need to enter into lengthy discussions with external actors over the design of the development. As a result, we might expect the completed projects to embody progressive local policies on climate change by including sustainability features such as renewable energy installations, water recycling, high levels of thermal efficiency and low levels of electricity demand.

Therefore, if the decision-making and implementation processes associated with Hans-Sachs-Haus show a shift towards *governance* and the traditional English policy style and institutional structure, this would suggest that its traditional *government* approaches are under serious threat. Similarly, if Gelsenkirchen operates within a flexible institutional environment and does not have significant autonomy from other tiers of government in determining planning policy, we can conclude that the Type I multi-level governance structure does not apply to this sector. Conversely, if Newcastle city council adopts a more hierarchical approach in its decision-making on the Core Building, then perhaps the typical English model is not as dominant as some might expect. In the same way, if Newcastle has significant freedom to decide on planning applications, and each tier of government has specific responsibilities in this area, then Type II characterisations of multi-level governance appear to be wide of the mark. Taken together, all of these factors ensure that planning policy in general, and these two developments in particular, are suitable objects for comparative analysis in the context of this thesis.

The research draws on over a dozen in-depth interviews with key actors in each city, as well as strategy documents and other municipal literature. The Newcastle fieldwork took place between January 2012 and November 2013, and the Gelsenkirchen interviews were conducted (in German) between June and September 2013¹.

Theoretical approach

This paper pulls together perspectives on multi-level governance and national policy styles to develop a theoretical framework for the analysis of each city’s approach. The following subsections address each of these points in turn and highlight their relevance for the specific case studies.

Multi-level governance

Multi-level governance perspectives aim to analyse the development and implementation of policy at various tiers – from the global to the very local. Gary Marks (1993) was the first to coin the term and, together with Lisbet Hooghe, he later developed the idea

¹ All translations from the documentation and interviews pertaining to Gelsenkirchen are my own.

further by characterising two different types of multi-level governance: Type I, which consists of relatively static, multi-purpose jurisdictions, and Type II, where more *ad hoc*, specific governance arrangements are more common (Hooghe and Marks, 2003). Table 1 summarises the differences between these types.

Type I	Type II
General-purpose jurisdictions	Task-specific jurisdictions
Non-intersecting memberships	Intersecting memberships
Jurisdictions organized in a limited number of levels	No limit to the number of jurisdictional levels
System-wide architecture	Flexible design

Table 1: Types of multi-level governance (adapted from Hooghe and Marks, 2003)

Hooghe and Marks acknowledge that the two theoretical types overlap in the real world, and that neither is demonstrably more effective than the other, but they nonetheless provide a useful distinction for the purposes of comparative politics. As a federal country that allocates specific responsibilities to the multi-functional *Länder* (federal states) and municipalities, Germany operates in more of a Type I environment. In contrast, England (though not necessarily other constituent parts of the United Kingdom following devolution to Scotland, Wales and Northern Ireland), has much more of a Type II unitary structure, whereby national policy-makers tend to view the local tier as local “administration” because it focuses largely on policy delivery, rather than acting independently as local “government” (Jones and Stewart, 1983). In addition, a range of other functional agencies, such as quasi-autonomous non-government organisations (quangos), have been established to play important roles in specific sectors – including the environment. This contrast has led Herrschel and Newman (2002) to characterise Germany and Britain as representing two extremes in terms of state structures: Types I and II respectively.

National policy styles

As will become much more apparent later, multi-level governance is more descriptive than analytical: it highlights the fact that numerous actors are involved in making and implementing policy, but does not act as a tool to help understand *why* things turned out the way they did (see Smith, 2003 for a more comprehensive critique). As such, it is a useful reference point when discussing the role of specific actors, but it is not an explanatory tool, and certainly not a comprehensive theoretical framework. Therefore, I have combined multi-level governance interpretations with the idea of national “policy styles”, which suggests that countries have specific *modus operandi* of policy-making and governance. For example, Richardson (1982) showed that some countries were much more likely than others to involve interest groups in policy-making, adopt certain types of policy instrument (“hard” legislation or “soft” law), or ensure that policy is co-ordinated horizontally and vertically.

Following on from Richardson, analyses of different national styles in the area of environmental policy have identified clear distinctions between the British (or English) and German approaches, both of which are anchored in what might be labelled their typical style. Germany is often described as a *Rechtsstaat* (literally “rights state”), due to its reliance on formal legal instruments and uniform standards. In keeping with this, environmental policy in Germany has traditionally been made by high-ranking officials and legal experts, and resulted in laws that penalise polluters, most of which are enforced by the *Länder* and local authorities (Jänicke and Weidner, 1997; Pehle and Jansen, 1998). This contrasts sharply with the pragmatic reliance on “soft” law and discretion that is typically associated with the UK and England. Britain’s more flexible and consensual approach involves a range of stakeholders – sometimes the very same

polluters who are penalised in Germany – in policy-making processes to increase the chances that they will adhere to the resulting legislation (A. Weale, 1997).

The extent to which each country takes a legalistic approach also manifests itself in whether it focuses on measuring the *amount* or the *consequences* of pollution. For example, H  ritier *et al.* (1994) and Wurzel (2002) have both distinguished between the traditional German focus on reducing *emissions* (the quantity of a pollutant released into the air, soil or water) and the British reliance on monitoring *immissions* (the environmental concentration of harmful pollutants in living organisms, in this case particularly humans). Finally, another crucial perceived difference between Germany and Britain is the former's preference for "state-of-the-art" technical solutions, partly to stimulate a domestic green industry sector manufacturing products such as high-end renewable energy systems and or other low-carbon goods. This contrasts with the traditional British reliance on "best practicable means" for resolving environmental problems – although Wurzel (2002) found that both countries compromised on this by agreeing to a principle of "best available technology not entailing excessive costs" at the EU level.

	Germany	Britain
Regulatory style	Interventionist	Mediating
Traditional principles	<i>Sachlichkeit</i> (objectivity) <i>Ressortprinzip</i> (ministerial and departmental independence) Uniform standards	Professionalism Generalism Discretionary approach
Focus of concern	Level of pollution emitted (<i>emissions</i>)	Affect on human health of pollutants (<i>immissions</i>)
Preferred solutions	State of the art ("Best Available Technology")	Flexible and cost-effective ("Best Practicable Means", and "Best Available Techniques Not Entailing Excessive Costs")
State intervention	Hierarchical Substantive Low flexibility/discretion	More self-regulation Procedural High flexibility/discretion
Consultative approach	Formal Legalistic (<i>Rechtsstaat</i>) Hard law More adversarial	Informal Pragmatic Soft law Consensual
Regulatory structure	Functional decentralisation Sectoral Hierarchical co-ordination	Sectoral decentralisation Sectoral Lacking hierarchical co-ordination of local activities

Table 2: Contrasting styles of environmental policy in Germany and Britain (Albert Weale et al., 1991; H  ritier et al., 1994; adapted from Knill and Lenschow, 1998; and Wurzel, 2002)

Table 2, which has been adapted largely from Knill and Lenschow (1998), but also incorporates some analysis from Weale *et al.* (1991), H  ritier *et al.* (1994) and Wurzel (2002), shows some of the main contrasts between the typical policy style of each country.

There is a clear parallel between Knill and Lenschow's interpretations of contrasting regulatory structures and Hooghe and Marks' two typologies of multi-level governance. These similarities reflect the interdependence between a policy-making approach and the institutional and structural context: one is likely to influence the other, and vice-versa. As such, they are separated by a dotted line in Figure 1, which illustrates the theoretical framework adopted for this research project and the hypothesis under investigation. The

hypothesis suggests that the typical institutional structures and policy styles associated at the national level in both countries may also be present in municipalities, and that these approaches could be converging towards a hybrid model.

The oval shapes at the top of Figure 1 highlight the typical contrasts between England and Germany in terms of policy style and institutional structure. As Hanf and Jansen (1998) argue, to a certain extent policies are path-dependent, reflecting the institutions that “produced” them. Therefore, to recognise the fact that these concepts are not necessarily easy to distinguish (because institutional structures almost certainly influence policy style, and vice-versa), they are separated by a dotted line. The research hypothesised that policy styles could be affected by exogenous pressures such as the effect of EU regulations on the discretionary approach traditionally favoured in England, or the influence of interest groups and the media on Germany’s reliance on uniform legal standards. Similarly, an endogenous drive for improved performance could manifest itself through structural reforms – whether to ensure that environmental policy is better integrated into sectoral institutions (which may be the case of England), or in an attempt to concentrate expertise in a particular area and introduce new public management-type reforms (as may be the case in Germany).

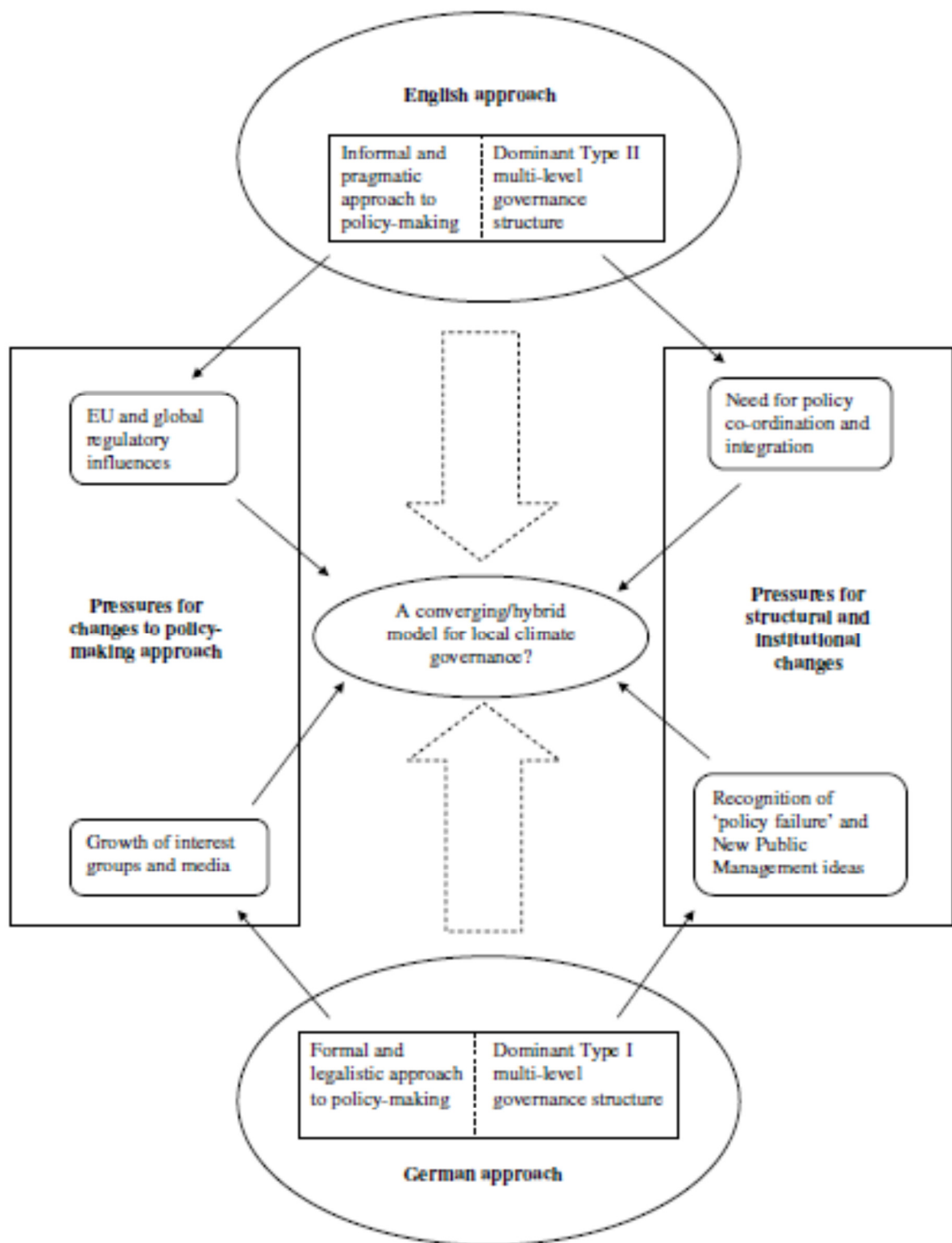


Figure 1: Converging pressures on traditional approaches to institutional and regulatory governance in England and Germany

As the diagram suggests, a regulatory style and “Type I” institutional structure on the one hand, and a pragmatic style and “Type II” institutional structure on the other, are generally considered to be relatively *foreign* to England and Germany respectively, but very common in the other case study country. As the following empirical analysis will show, some of these characteristics have been *imported* into the governance of climate change strategy in both Newcastle and Gelsenkirchen – something that could have research implications for those interested in the area of policy learning and transfer (Dolowitz and Marsh, 2000). However, the drivers for these changes in approach were not the reasons that were originally envisaged at the outset of the research and that feature in Figure 1. Moreover, many of the traditional arrangements have continued largely unaltered, or on occasions the municipality has tried to adapt to events to continue with the existing governance philosophy.

Thus far however, the vast majority of comparative research into these perspectives have focused at the national level – as might be expected, given that the concept of policy styles assumes that countries adopt different approaches to addressing similar policy problems². This paper complements and builds on this body of work by taking the city as the main unit of analysis and identifying whether similar national characteristics are evident at the local level, and whether any forces are causing them to converge. Studies of national governments have been somewhat inconclusive about the extent to which convergence is taking place (see for example Richardson, 1982; Hanf and Jansen, 1998): it may be that we can draw clearer conclusions from what is happening in local authorities.

This paper addresses each city in turn, beginning by explaining the background to each development project. It then analyses how decision-making and implementation processes associated with planning policy in general, and the case study projects in particular, relate to the theoretical framework outlined earlier. In order to ensure a clear focus for this analysis, it breaks down the two dimensions of multi-level governance and policy styles into sub-dimensions (see Table 3), and assesses whether these arrangements are changing in any way.

		“Typically” German characteristics	“Typically” English characteristics
Multi-level governance dimension	Organisational autonomy	Largely autonomous, within a structured, multi-tiered vertical framework	Dependent on higher tiers of governance within a dynamic vertical framework
	Fragmented state structures	Multi-purpose local authority	Task-specific agencies in the locality
Policy styles dimension	Hierarchy vs engagement	Strong state hierarchy with strict standards	Horizontal engagement with flexibility and compromise
	State of the art solutions vs Best Practicable Means	Reliance on state of the art technological solutions	Preference for best practicable means and cost-effectiveness

Table 3: Dimensions and sub-dimensions of multi-level governance and policy styles in Germany and England

Background to Hans-Sachs-Haus and Heinrich-König-Platz

Gelsenkirchen Council began a programme of urban regeneration and renewal in 2004, and the redevelopment of Hans-Sachs-Haus and the adjacent public square (Heinrich-

² Analysis by Bulkeley and Kern (2006) did find that three local authorities in England and three in Germany were relying increasingly on an “enabling” mode of governance, which involves facilitating and encouraging action through partnerships, engagement, incentives and persuasion, rather than hierarchical regulations or the direct provision of services. This thesis will add to Bulkeley and Kern’s study by conducting in-depth analysis of one city in each country, and interpreting the findings in the context of national policy styles.

König-Platz) formed a key part of its plans for the city centre. These plans came under the broad heading of *Stadtumbau-City* and, in contrast to many other initiatives within the overall programme, focused primarily on the physical redevelopment of public space rather than 'softer' issues of social inclusion or responses to industrial decline. As such, it sought to replace or refurbish many post-war buildings in the centre of Gelsenkirchen, expand the pedestrian precinct and re-use some brownfield sites. At the centre of the plans was the redevelopment of Ebertstraße, a street running north-west from the central Heinrich-König-Platz to the famous Musiktheater. Hans-Sachs-Haus is situated towards the Heinrich-König-Platz end of this street (see Figure 2).



Figure 2: Picture of Heinrich-König-Platz being redeveloped in July 2013. Hans-Sachs-Haus is in the background (partly obscured by the tree)

The council viewed the redevelopment of Ebertstraße as important for various reasons. Firstly, many buildings in the area were in a poor state of repair, which meant that businesses were reluctant to base themselves in the city centre. In addition, Gelsenkirchen's population was around 400,000 when the square was built in the 1960s, and the council expected it to continue growing at a rapid rate. As a result, the main underground station at Heinrich-König-Platz was designed to cope with far more people than the 260,000 who now live in Gelsenkirchen (interview 17). The station's large sunken entrance dominated the square (see Figure 2) and the council decided to reduce it in size significantly, cover over the sunken entrance and reclaim the space above it for the wider public (interview 17). As such, it advertised for a contractor in March 2009 through the EU's procurement process, and work began on redeveloping the square in January 2013.

The refurbishment of Hans-Sachs-Haus was part of the same regeneration programme, although its history was somewhat different. This building dates from the 1920s and is one of the few remaining examples of neo-gothic brick expressionism left in the Ruhr area. Designed by the architect Alfred Fischer, it was one of the first buildings to incorporate the developing ideas of the iconic Bauhaus movement (interview 23). It was originally styled as a multi-functional building, and hosted local carnivals and conventions, although some of it was soon occupied by council officials. After the Second World War it also housed the council chamber and registry office, but these functions were slowly dispersed around the city and by the mid-1990s the building lay empty. Aware of the architectural value of the building and its local popularity, the council contracted a private investor to refurbish it and turn it into office space, but after the costs of this project increased tenfold the city “pulled the plug” and the project was stopped (interview 23). At this point a number of politicians and officers in the council argued that Hans-Sachs-Haus should be demolished to accommodate something else on the site – this would have been cheaper than refurbishing the old building (interview 17). The council was even given permission to do so by Germany’s *Denkmalschutz* system to protect historical or important buildings. However, there was significant local opposition to such a move. This manifested itself in a local campaign and pressure group (the *Hans-Sachs-Haus Bürgerforum*), which organised a petition to “rescue” the building and ensured that its future became a major issue at the 2004 local elections (Hans-Sachs-Haus, 2006). In response to this public pressure, the SPD’s mayoral candidate promised to retain the building were he to be elected, and he narrowly defeated the incumbent CDU mayor in a run-off. The result of this legacy is that

“Hans-Sachs-Haus is a major political issue in the city. The history of Hans-Sachs-Haus around the end of the last century, in the mid-1990s, was characterised by arguments and quarrels... if you know Gelsenkirchen well, you’d know that the city hasn’t been very sensible when it comes to old buildings, particularly because – as in various cities in the Ruhr area – the damage to architecture during the war was actually exacerbated by some of the rebuilding. People destroyed quite a lot after the war: their preferences for cheap 1960s architecture and poor consideration for town planning made a mess of many a place... In that respect, Hans-Sachs-Haus has a particular importance for this city, because local people succeeded in convincing the political class to keep it and to refurbish it” (interview 23).

By the mid-2000s, after the building had been empty for over a decade and covered by a provisional façade, the council launched a competition for its refurbishment and invited various companies to bid for this work. At the end of a drawn-out procurement process the contract was awarded to the architectural firm Gerkan, Marg und Partner (GMP), which worked on the project from 2009 until the refurbished building opened in August 2013. In the few months after work on the project commenced it was deemed so controversial that it was overseen by a specific, *ad hoc* council committee, before being transferred over to the transport and buildings committee. Although the brick expressionist exterior has been fully restored in accordance with its original design (see Figure 3), this was separated from the interior of the building, which was then completely re-designed to incorporate a central atrium and smaller rooms around the outside for its new occupants. It is now occupied by the political party groups in Gelsenkirchen Council, including the mayor and his staff, as well as various ‘non-technical’ officers – a total of 320 people. These were moved from other offices in the city, with the result that the authority no longer requires two other buildings.



Figure 3: Hans-Sachs-Haus shortly before it was reopened (photograph taken in July 2013)

The controversy over the future of Hans-Sachs-Haus ran in parallel with the decline of traditional heavy industry in Gelsenkirchen and the city's attempts to re-orient the local economy around newer technologies, particularly solar energy (Jung *et al.*, 2010). As the political debate over the building meant that it became an even more prominent local landmark, the council sought to ensure it symbolised Gelsenkirchen's position as a city that was forward-looking and sustainable. Furthermore, the building's location in the centre of town, and the council's desire to re-brand the area around Ebertstraße as "the heart of the city", ensured that Heinrich-König-Platz and Hans-Sachs-Haus would symbolise the city of Gelsenkirchen in the eyes of both local people and visitors (interviews 23 and 24). In this way, we might expect the council's policies on climate change to manifest themselves in the building's design and energy requirements. As such, both development projects are relevant objects of analysis for the purposes of this thesis, although Hans-Sachs-Haus's status as an occupied council building means that it is generally more applicable than the re-landscaping of Heinrich-König-Platz.

Background to Science Central

The Science Central site in Newcastle is significantly larger than the redevelopment of Ebertstraße: indeed, at 24 acres it was the largest city centre redevelopment project in the UK when work began (Ford, 2013). However, it is also located near the centre of town (see Figure 4) and has come to symbolise how the council views the future of the city. The site was previously occupied by Scottish and Newcastle breweries, which produced the famous Newcastle Brown Ale here between 1927 and 2005. After the brewery moved production south of the river Tyne to Dunston in Gateshead, the area was sold to a consortium of Newcastle City Council, Newcastle University and One North East (ONE, the regional development agency for the north-east of England that has since been abolished). The council now owns 65% of the site, and the remaining 35% belongs to the university (and any profits from the development are shared accordingly),

although both parties need to agree to any strategic development decisions (interview 6).

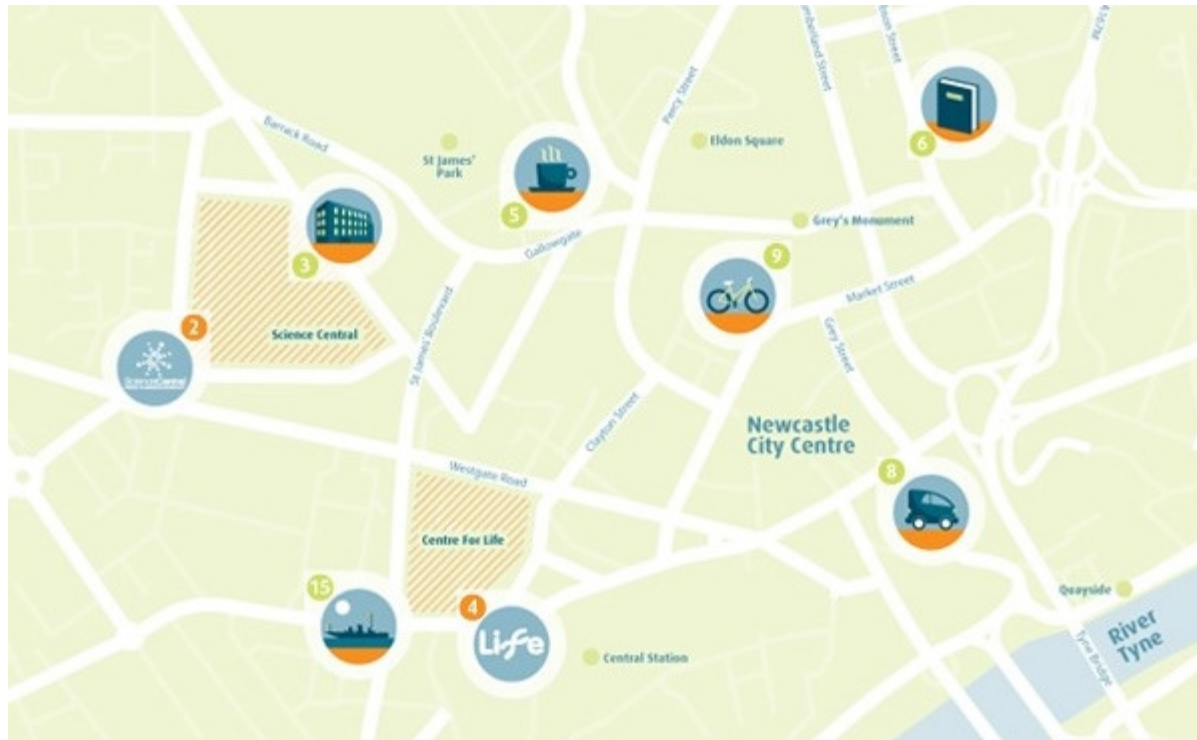


Figure 4: Local of Science Central (source: Newcastle Science City, www.newcastlesciencecity.com)

At the time, the consortium did not have many clear ideas for developing the site (interview 6). However, the council in particular was aware that the Vaux brewery adjacent to the centre of nearby Sunderland had closed several years previously. The supermarket chain Tesco had bought this site, but was then reluctant to develop it unless and until market conditions improved significantly. As a result, the former Vaux site was derelict for many years (indeed, it still is at the time of writing), and therefore Newcastle was keen to avoid a similar situation developing within its own city boundaries (interview 6). Alongside this, the university wanted to construct new buildings close to its existing city centre campus, and ONE felt that the site had significant long-term potential as a focus for urban regeneration (interview 11). Therefore all three partners were keen to be pro-active and develop the land, and purchased it together in 2006.

Shortly before this, in December 2004, Newcastle was designated as one of six 'Science Cities' in the UK. This was essentially a branding exercise by central government, which wanted to promote the study and application of science, technology, engineering and maths (STEM) in regional economies outside London and hoped to encourage local businesses, universities and councils in each of these places to work together under the umbrella of Science City. Together with Newcastle University and ONE, the council decided to put the former brewery site at the centre of its Science City initiative, and sought to work out how they could use the area to nurture new and existing businesses in the science and technology sector. The university already had a global reputation for biosciences and stem cell research, and the council wanted to build upon this by encouraging other "knowledge" or "future" industries (the "new economy") to the area (interviews 6 and 13). As such, Science City chimed with the council's longer-term objective to encourage science and technology firms to invest in Newcastle and became

a central plank of its economic development policy (interview 11). Similarly, the emphasis on diversifying Newcastle's economy away from a reliance on public sector and retail employment ensured that the third partner in the consortium, ONE, also supported the Science Central plans. Indeed, Newcastle's partnership has been much more proactive and successful than those of some other Science Cities (Webber, 2008), partly because of its decision to place the former brewery site at the centre of its strategy, "with the expressed intention of turning it into the place where the science economy would be encouraged to grow" (interview 11).

Due to its importance to the overall Science City initiative, and also because of its location next to the heart of Newcastle, the site became known as Science Central. Its prominent place in the council's economic development plans meant that it assumed great importance for the city in general and the council in particular – in the same way as the area around Ebertstraße became a key part of Gelsenkirchen's strategy. In addition, Newcastle council's objectives around science and technology chimed with the university's plans to invest in research into renewable energy, climate change and sustainability more generally. Indeed, Newcastle University has chosen sustainability as one of three "societal challenge themes" under which its research is categorised, and created a Institute for Sustainability in 2008 to undertake work in this area (Newcastle University, 2014). As such, these issues assumed great significance for the overall project – in the same way as Gelsenkirchen sought to exemplify its position on solar power and renewable energies through the redevelopment of Hans-Sachs-Haus.

The site comprises a total of nineteen plots, on which over 40 buildings could be constructed over the next twenty years or so. At the time of writing, work has only been completed on one of them – the Core Building – although it has also begun on another, the university's SaGe Building. Since the Core Building – like Hans-Sachs-Haus – will accommodate council employees, this thesis focuses particularly on the decision-making associated with these two projects. However, it also includes reference to and analysis of the more general planning procedures that operate in both countries, illustrating them with examples of other development projects where appropriate.

With the context for each case now clear, the paper now analyses how the decision-making processes in Gelsenkirchen and Newcastle relate to the sub-dimensions of multi-level governance and policy styles that we might expect to be apparent in each city.

Multi-level governance and planning policy

Gelsenkirchen

This section addresses the two sub-dimensions of Type I multi-level governance in the context of Gelsenkirchen. As such, it begins by analysing the extent to which the city has autonomy to take planning decisions within the context of a structured vertical framework that incorporates other tiers of government. This is followed by an investigation into whether the council retains its position as a multi-functional body in planning policy, or has divested some of its planning responsibilities to task-specific agencies within the city.

Local autonomy within a structured vertical framework

There is some evidence to suggest that planning policy in Gelsenkirchen, particularly in the context of the Ebertstraße development, is determined by Type I multi-level governance arrangements, as the council has significant autonomy to take and implement its own decisions within a wider policy framework. As Schmidt and Buehler (2007) point out, German local authorities take planning decisions within a decentralised structural framework that relies heavily on legal instruments and is set out at the federal

level. However, there is significant vertical interaction between municipalities, *Länder* and the federation (through a process known as the *Gegenstromprinzip*, or “counter-current principle”) to ensure that their planning policies are co-ordinated effectively and do not conflict (Oxley *et al.*, 2009). Therefore, planning decisions in Gelsenkirchen are informed by a regional spatial strategy, which covers six cities and outlines general guidelines for developments within the area. However, under the principle of *lokale Selbstverwaltung*, the council produces its own planning policy that could either endorse or reject some of the objectives in the regional strategy:

A political party could say ‘climate protection and adaptation are so important to us that we say “here in Gelsenkirchen we have the following objectives”... and then the council might say ‘we will only pass something that, for example, would only consider development on this many hectares of greenfield land’ (interview 15).

Similarly, provided they are acting within the law, councils can take decisions on land use that override state or federal opinions and regulations – and also the views of their officers (interview 15). For example, there are federal, state and *Bezirk* “prompts” to restrict green field development, but these are general in nature and therefore local authorities have significant autonomy to decide on planning applications within the overall framework. Nonetheless, planning approvals must stipulate how the proposed development is in keeping with these broader strategies – and, by the same token, developers often refer to them to support an appeal against a decision to refuse permission to build. There was strong support for this principle of autonomy in planning amongst officers at Gelsenkirchen, with one interviewee making the case that the council needs to be able to make these decisions in order to ensure the next chapter of the city’s “story” is subjected to local democratic oversight (interview 23).

One federal law that municipalities – and indeed all property developers across Germany – must take account of is the *Energieeinsparverordnung* (Energy Conservation Act) of 2009. This legislation was passed at a time when many building companies and architects were competing with one another to make their constructions as environmentally-friendly as possible (interview 26), and forms a key part of the German government’s aim to reduce energy demand. Indeed, it has been credited with playing an important role in ensuring that Germany had the world’s most energy-efficient economy in 2014 (Young *et al.*, 2014). The law stipulates that new buildings – and any buildings that are undergoing refurbishment – need to adopt energy-efficient and climate-friendly features such as solar thermal water heating systems, renewable heat sources, more efficient boilers and thermal insulation. To illustrate the far-reaching nature of this legislation, it also stipulates that the refurbishment of buildings constructed before 1990 must ensure that they reach at least the level of energy efficiency that is required for new developments (EnergieAgentur, 2008). It also requires all buildings to have energy performance certificates (Power and Zulauf, 2011), which describe how well they conserve energy and the extent to which they rely on renewable sources, and calculate a rating based on this analysis (interview 26). This legislation applies across Germany, but essentially acts as a ‘floor’ of standards to which individual municipalities must have regard: they could stipulate that new developments within their jurisdiction should meet higher standards than those required by the Act. Although Gelsenkirchen’s economic situation means that it needs to attract investment and therefore is reluctant to place expensive demands on potential developers (interview 25), the council was nonetheless keen to ensure that Hans-Sachs-Haus attained a high score and thereby acted as a model of sustainable design in the city (interviews 23 and 26). Indeed, the refurbished building incorporates a plethora of sustainability features that ensure it exceeds the requirements of the Energy Conservation Act, including photovoltaic panels on the roof and a geothermal heat exchange system. In this way, we can see how Type I characterisations of multi-level governance, which suggest that separate tiers of government have a reasonable degree of autonomy and act independently of one another, can be applied to energy conservation policy in Germany.

Similarly, although Gelsenkirchen was able to exercise this autonomy over the building design, it had to rely on higher tiers of government to help fund the Ebertstraße redevelopment. As a heavily-indebted municipality that is subject to a *Haushaltssicherungskonzept* (budgetary assurance programme), 80% of the funding for capital projects in Gelsenkirchen comes from the state government via the *Bezirksregierung* in Münster. In this way, the redevelopment of Heinrich-König-Platz was largely funded by the *Land* of North Rhine-Westphalia. Similarly, the state provided 80% of the €17m that was required to refurbish those parts of Hans-Sach-Haus that are now open to the general public (such as the central atrium and foyer area). Although the total budget for Hans-Sachs-Haus was around €60m – the municipality of Gelsenkirchen had to pay the balance, because this was to finance work on areas that had no public access, such as the council chamber and offices for party groupings, council administrative staff and the mayor (interview 23) – this meant that the regeneration programme had to adhere to *Land* regulations for urban development projects. These regulations accord climate change considerations the same status as statutory anti-discrimination and accessibility requirements (Ministerium für Bauen und Verkehr, 2008). Therefore, although councils do have a certain degree of local autonomy to decide on the nature of municipal development projects, they have to operate within a broader framework of state and federal regulations, particularly when they are dependent on funding from *Land* or *Bund*. Indeed, other development projects that relied heavily on support from higher tiers of government also had to meet the *Land's* strict sustainability criteria. For example, the *Solarsiedlung* (solar village) that was constructed on the site of a former coal mine in the Bismarck area of the city also had to meet the *Land's* strict sustainability criteria in order to qualify for external funding. Both of these initiatives illustrate the specific, structured nature of governmental relations, in line with Type I characterisations of multi-level governance.

Nonetheless, a number of typical features of Type I multi-level governance have changed in recent years, particularly as Gelsenkirchen has become more reliant on the state and *Bezirk* levels of government due to its status as an indebted municipality. Gelsenkirchen's level of debt means it needs to agree a *Haushaltssicherungskonzept* (HHSK, budgetary assurance programme) with the state government, via the *Bezirk*, to outline how it will be able to repay its budget deficit within a three year period. In return, the *Bezirk* provides more funding for capital projects that are deemed necessary: 80% of the estimated cost rather than the 60% that municipalities without a HHSK received. As might be expected, the *Bezirk* monitors this investment carefully, which compromises Gelsenkirchen's autonomy and the principle of *lokale Selbstverwaltung*. Therefore, although projects as large as the regeneration of the Ebertstraße area would need financial support from the state and regional tiers anyway, Gelsenkirchen's indebted status means it is more reliant on the *Land* and *Bezirk* than many other cities, both in North Rhine-Westphalia and particularly elsewhere in Germany, since the other *Länder* have not (yet) introduced a similar budgetary assurance system. Such a situation contrasts sharply with Type I "Russian doll" image, in which nested jurisdictions operate largely independently of one another.

Indeed, the processes for bidding, approving and monitoring the spending of *Land* funding require very close co-operation between the municipal and *Bezirk* levels of government and thereby exacerbate the degree of interconnection between state institutions. In principle, these processes are transparent and suggest a clear distinction between tiers, but the reality is somewhat different. For example, any application for capital investment begins with a municipality submitting a proposal to the *Bezirksregierung*, where architects, project managers and financial experts examine it in depth. The *Bezirk* then forwards on a limited number of outstanding proposals to the *Land*, which then agrees to provide each region with the necessary funding up to an annual limit. In 2013 this limit for Münster was €24m (of which just over half was

earmarked for regenerating the city centre, including the Ebertstraße area) and for NRW as a whole the figure was €168m.

In practice however, the regional tier collaborates very closely with both the municipal and state levels to ensure that proposals are viewed favourably. In particular, staff in the *Bezirk* view themselves primarily as consultants, whom municipalities can approach for advice, rather than people who hold tight purse strings and are reluctant to allocate funding for any projects. This involves working with local authorities to “edit and improve” their submissions (interview 27) and ensure that they fit the necessary criteria for approval. One such requirement stipulates that projects must be clustered around a particular area (*Gebietsbesschluss*) to demonstrate that they are part of a wider strategy for regeneration. If the *Bezirk* feels that a particular submission does not meet this criterion, it might suggest that the municipality should group various separate projects into a single bid or split one proposal into two or more initiatives (interview 27). Similarly, this type of *Land* funding may only be used for capital projects (significant redevelopments or new builds that are expected to last for decades, rather than any routine maintenance or upgrades), and it must be spent solely on facilities that will be used by the public – not private or voluntary groups. In order to ensure that bids for this investment are successful, the *Bezirk* may work with some local authorities – especially smaller district councils – to ensure that their submissions pass these particular tests. All five *Bezirke* in NRW collaborate with municipalities to a similar extent on these bids, to the extent that “99% are approved eventually” – even if some proposals have to wait for a year or two because the *Bezirk* in question is approaching its allocated funding limit (interview 27).

Once a funding bid is authorised, officials from the *Bezirk* monitor individual projects closely to ensure that they remain reasonably on time and within budget and meet the responsible municipal officials at least every six months to discuss their progress (interview 17). The overall funding package is allocated in stages, after the project passes specific milestones that are agreed at the outset – and if the project does not deliver what the *Bezirk* expects, the council could face having to pay some of the money back (interview 23). As might be expected, the progress of projects in highly-indebted municipalities such as Gelsenkirchen are observed particularly closely:

That means every bank transaction... [We] need approval for the budget and the spending from top to bottom... It's not the case that we have €10m for the city centre and can do absolutely anything with it (interview 17).

Although the city has delivered successful capital projects before (such as a new underground line and childcare facilities), its history has given the *Land* and *Bezirk* understandable concerns about their financial competence, which municipal officials feel reduces their autonomy in decision-making:

I'm not a politician. I'm just a manager. Nonetheless, as a council we always have budgetary problems if there is a level of jurisdiction above us that has said what we can spend money on (interview 23).

Since Gelsenkirchen had entered into a budgetary assurance programme with the state government, it would have needed *Land* approval (via the *Bezirk*) for the Ebertstraße redevelopment even if it had funded the whole project internally through capital borrowing (interview 23). This means that those councils that are subject to a HHSK end up collaborating even more closely with the regional tier than others. This phenomenon of *Politikverflechtung* has characterised German policy-making for several decades (Scharpf *et al.*, 1976) and the redevelopment of Hans-Sachs-Haus and Heinrich-König-Platz illustrate the extent to which it applies in Gelsenkirchen. Indeed, an official in the *Bezirksregierung* characterised their relationship with the city thus:

I could not imagine that we could work any closer together than we do now (interview 27).

One interviewee in Gelsenkirchen was somewhat annoyed by the increased level of oversight from the state and regional tiers, comparing his situation to that of a child who has to ask their parents for extra pocket money and criticising the resource-intensive and slow nature of budgetary decision-making. Nonetheless, he was overwhelmingly positive about the support provided by the *Bezirk*, even if he felt that his experience may have been atypical:

It's not normal that higher tiers of government understand those underneath them very well, but it has worked out wonderfully here (interview 23).

Notwithstanding the paternalistic nature of state-municipal relations that apply to heavily-indebted councils, it is crucial to note that much of this vertical collaboration is done on an entirely voluntary basis, on the understanding that both tiers of government will be able to punch at a higher weight if they work together. It is notable that both tiers were wholly supportive of both the Bismarck *Solarsiedlung* and the Ebertstraße project: the *Bezirk* recognised their potential for putting Gelsenkirchen on the map as a sustainable city and therefore encouraged and supported the council throughout the bidding processes. Furthermore, after funding was secured for both projects, the *Bezirk* provided local authorities an easy access point into *Land* administration and the positive attitudes of regional government officers means that council staff could discuss issues with them in a relatively unthreatening environment. One officer compared this idea of pooling decision-making capabilities in order to increase council capacity with the politics of the European Union (interviewee 23). Indeed, recent discussions around "localism" in England have stressed the need for English councils to have greater *autonomy* in decision-making (the ability to take decisions for the benefit of their communities), whereas German authorities are more concerned with *capacity* (the ability to implement their policies). Such a distinction has echoes of the debate around "national sovereignty" in the UK's relationship with the EU, which tends to view power as a zero-sum game (it either rests with "Westminster" or "Brussels") rather than interpret it as a country's capacity to maximise its influence in an increasingly interdependent world (see Howe, 1990 for a discussion of this distinction).

In addition to this vertical collaboration, municipalities within NRW are working together *horizontally* to co-ordinate their planning activity. For example, local authorities in the area formed the *Regionalverband Ruhr* from the bottom-up to encourage a co-operative response to industrial decline across *Bezirk* boundaries. Officers in Gelsenkirchen were particularly critical of the fact that the *Ruhrgebiet* straddles multiple *Bezirke*, arguing that it made regional planning much more complex than needed to be the case:

If Gelsenkirchen wants to plan something together with Herne, two regional governments need to be involved – Muenster and Arnsberg... I think it would be good if the *Ruhrgebiet* had its own regional jurisdiction (interview 23).

Although this example does not relate directly to the Ebertstraße development, it is nonetheless notable that councils have used party-political networks to facilitate greater policy co-ordination and implementation. For example, several officers at Gelsenkirchen council were critical of north-south transport connections within the *Ruhrgebiet*, contrasting them with excellent links from west to east. They all felt that this was largely a result of party-politics: Gelsenkirchen was much more likely to work with other Social Democrat (SPD)-led authorities and mayors (most of which were located to the west and east) than collaborate with the predominantly Christian Democratic (CDU) municipalities to the north and south (interviews 14, 21 and 23). As such, local politicians are bypassing those official state institutions that map onto a Type I multi-level governance model, in favour of more private networks and informal channels – something that Dahme and Wohlfahrt (2003) also identified in their analysis of economic development policy across the *Ruhrgebiet*. A key reason for this is the inflexible nature of the state

structures, which does not allow for easy co-operation on transport planning and has been exacerbated by the absence of a *Bezirksregierung* specifically for the *Ruhrgebiet*.

In other words, in order to have a better chance of achieving their planning objectives, municipalities have developed their own governance arrangements that operate outside official institutions, whilst also continuing to work within traditional administrative boundaries. Notably, there is no officially sanctioned “metagovernance” (Jessop, 2002; Kooiman, 2003) framework for this dual system: the rules for managing and structuring interactions are unclear because they depend on personal relationships between mayors, politicians and senior officials in the various municipalities. This fluid arrangement is in stark contrast to the nested jurisdictional model of Type I multi-level governance.

Gelsenkirchen council as a multi-functional body

In a final example of how the redevelopment of the Ebertstraße area fits with this model, it is notable that the whole programme was overseen directly by council staff in the property and regeneration departments. Although the design and construction contracts were awarded to external contractors, the project managers for Hans-Sachs-Haus and Heinrich-König-Platz were salaried employees of Gelsenkirchen council – not an external, *ad hoc* agency or special-purpose vehicle that was created specifically to oversee the work. Although this may have been a legacy of the initial, failed attempt by a private investor at redeveloping Hans-Sachs-Haus, it nonetheless illustrates the city’s continuing belief that it should be a multi-functional body and not outsource or ‘hive off’ too many functions to outside agencies. This belief held firm in spite of criticism of other large public projects, such as Berlin’s new international airport, Stuttgart’s new 21 train station or Hamburg’s concert hall (Diekmann *et al.*, 2013), all of which were overseen by salaried council employees in other large German cities. Staff and politicians in Gelsenkirchen were well aware of this general criticism of public works projects, but there was strong support for keeping the project in-house, with one interviewee stressing the importance of ensuring democratic control over planning developments:

The fewer competences we have as a council, the more people take away the story of the city, or give away the story of the city, particularly in terms of its buildings (interview 23).

Furthermore, because there is no research-intensive university in Gelsenkirchen, it was much more incumbent on the council to take responsibility for some of the technical aspects of the project – and indeed the city’s climate change policy more broadly. This is a crucial difference between Gelsenkirchen and Newcastle, where a strategic partnership between the municipality and the university allowed the council to offload some of the responsibility for sustainability in the Science Central site (as this paper highlights later). Although the Ebertstraße redevelopment is undoubtedly a smaller project than Science Central, and Gelsenkirchen was much keener to retain this responsibility in-house than Newcastle, the opportunity was not available to share this in any way and this made its job much harder (interview 20).

As the above discussion illustrates, the regeneration of Gelsenkirchen city centre is shaped by both the local authority and the regional level of government, which in turn acts on behalf of the *Land*. Municipalities in the *Ruhrgebiet* are also engaged in an increasing amount of horizontal collaboration along party-political lines, which often ignores official jurisdictional boundaries such as the *Bezirke*. Such a characterisation contrasts with the Type I model of clearly-defined, multi-functional jurisdictions and significant local autonomy. Although those municipalities that are not subject to a HHSK would have greater freedom to invest in projects such as the Ebertstraße redevelopment, they would still be subject to federal legislation such as the Energy Conservation Act. Similarly, if they applied to the regional tier for additional funding (and they would be entitled to receive up to 60% of the necessary capital investment from the

Bezirk), their bids would need to meet specific *Land* criteria on energy consumption and state officials would monitor the project from inception to completion. Therefore, it is clear that a Type I model of multi-level governance is far too simplistic a characterisation to apply to the city's planning policy in general, or the Ebertstraße redevelopment in particular. Instead, in order to have a better chance of achieving their objectives, municipalities have developed their own governance arrangements that operate both within and outside official institutions.

Newcastle

Local autonomy within a vertical framework for planning policy

Local authorities in England are required to set out their planning policies and objectives in a Local Development Framework (LDF), which includes a Local Plan. These documents act as key reference points for planning decisions: if the council agrees that a proposed development is in keeping with its Local Plan, it should approve the application in question. Municipal officials tend to decide on smaller or uncontroversial applications, but larger projects are normally subject to a vote in the council planning committee. At Newcastle, the LDF has regard to the overall economic strategy, the *OnePlan*, which was developed together with neighbouring Gateshead and aims to stimulate newer industries that will help to grow the core of both cities. The *OnePlan* was produced to try and stem Tyneside's long-term economic decline, and therefore aimed "to get away from this cycle of dependence on low-skill, low-value jobs... to move away from this perpetual worklessness that's existed for a number of decades" (interview 11).

Councils used to prepare their LDFs within the context of Regional Spatial Strategies (RSS), but the Coalition Government abolished RSSs alongside other regional institutions shortly after it took office in 2010. As such, the multi-level governance structures for planning have undergone significant changes in recent years, which have had a notable impact on decision-making in planning policy. Officers at Newcastle did feel that the RSS for the north-east was over-ambitious even at the time it was written, before the full impact of the financial crisis became apparent (interview 2). After its abolition however, LDFs were only required to work within the context of a new National Planning Policy Framework (NPPF), which was supposed to give local authorities increased autonomy but actually required them to adhere to poorly-defined central definitions of sustainable development in planning decisions (Department for Communities and Local Government, 2012, interviews 1 and 2). This left a void at the intermediary level and threatened to trigger a "free for all" in which councils would "race to the bottom" to attract development and permit the construction of low-quality, energy-inefficient buildings (Hetherington, 2011).

These developments have had a greater impact in more deprived parts of the country (including Newcastle), which view external investment as key to boosting the local economy but may also want to use their planning powers to encourage more sustainable construction. One officer felt that "ramping up" their criteria for development "would be a big fight – and it would be done in the context of everyone else not doing it. [It is] not a fight that we might win" (interview 1), whilst another was more critical of the lack of a structured set of national, regional and local standards for sustainability:

Ideally, if you talk about being serious about climate change... it should be almost top-down and then you kind of get more detail as you go through it. The current government's completely turned it on its head and said 'ok, well, we're not going to take it on, it's up to you to do it'. And therefore it then throws it in the basket with all the other things you need to negotiate [with developers]. Because if the government says this and you're going to have to build to this standard, then it's a level playing field – everybody in the whole of England has to do it and therefore there's no kind of advantage in going to another council or whatever... To me you really should set high-level standards at the high level and your

regional standards because you have regional variation, and then your local standards at the local level (interview 2).

Despite the fact that local authorities theoretically enjoyed greater freedom to make their decisions under the National Planning Policy Framework, this dynamic and unstructured vertical framework for planning policy is highly illustrative of Type II multi-level governance arrangements and contrasts sharply with the situation in Germany. It means that cities such as Newcastle are particularly constrained in using planning policy for climate change mitigation because of the need to stimulate economic growth within the locality. Newcastle has responded to this situation by developing a joint LDF with neighbouring Gateshead, in the hope that shared standards in both boroughs does offer some safety net for sustainability, although this is the only collaborative LDF in England (interviews 1 and 2). For the purpose of this thesis however, it demonstrates how local authorities can cross or ignore traditional jurisdictional boundaries in planning policy, due to the flexibility within the system – and therefore illustrates the extent to which English councils operate within a flexible, Type II multi-level governance environment.

More specifically, the institutions involved in the Science Central project also reflect Type II characterisations. For example, the abolition of One North East, which was closely involved in the Science City programme from the outset until the regional development agencies were disbanded in 2011, illustrates how some public bodies can be created and dissolved easily within this model. At the outset of the project the council and university each invested £8m in Science Central, and ONE contributed £1.2m towards developing the site. This illustrated the fact that it expected to continue to support the initiative as part of its remit to promote economic development across the north east (interviews 6 and 11). However, its abolition meant that one of the founding partners no longer existed and this represented a significant threat to the viability of the whole project.

Newcastle's reliance on task-specific organisations

Newcastle's position on the second sub-dimension of multi-level governance provides further evidence that a Type II structural characterisation is accurate. Most notably, the three partners had created a specific vehicle, Newcastle Science Central, to oversee the programme of development, which was able to continue and seek additional funding after ONE ceased to exist (interview 31). Indeed, the Science Central project was previously overseen by another company, 1NG, which Newcastle and Gateshead councils had established in 2008 in order to develop the infrastructure that might attract investment to both sides of the river Tyne. Given its role in the local economic development strategy it was quite clear how the Science Central project would fit into this remit, although the relationship between the two bodies was on a fairly commercial basis. For example, in the words of one interviewee, 1NG "basically provided a development consultancy service to the project", for which Science Central paid the market rate: it was "a pretty straightforward client-service provider relationship" (interview 11). By 2011 however, the two councils decided to abolish 1NG (primarily for financial reasons) and took some of its functions back in-house, with others being allocated to another public body, the Newcastle Gateshead Initiative (NGI), which had a more specific objective of marketing Tyneside to business investors (Pearson, 2011). An interviewee at Newcastle council explained the rationale for the creation of a separate Science Central project unit in the following terms:

"We've appointed this external organisation really, to deliver it on the partners' behalf... we had a different model in the earlier days, where the city had, a kind of, project team that we led on, but there wasn't really the focus on the project really, where people were doing it as part of another job. Whereas [the Science Central project manager's] pure job is to deliver Science Central for us, and he's got a small team" (interview 6).

Therefore, the project required specialist skills and expertise, which meant that managers at Newcastle felt salaried council employees would not be able to deliver it

effectively. In particular, there was a great concern that staff would be unable to devote themselves to it on a full-time basis – and this persisted, even after the decline of ONE and 1NG. Two years later the Science Central project, together with its staff, was brought more definitively into the Science City programme to clarify that it formed the centrepiece of the council's activity in this area (interview 31), and was henceforth governed directly by the Science City board of council and university representatives. Crucially however, it still operated at arms-length from the local authority: Science City procured the design team and architects and "it's their risk contractually" (interview 31). Furthermore, although the Core Building is occupied primarily by council staff, on a day-to-day basis it is run by an external facilities management company that is also responsible for the café and any events held on site.

The creation of these separate delivery organisations contrasts sharply with Gelsenkirchen's in-house approach to manage the Ebertstraße development and provides a clear illustration of how the different types of multi-level governance manifest themselves in each city. Single-purpose organisations are characteristic of Type II multi-level governance arrangements and the New Public Management-inspired idea that some tasks should be 'hived off' to groups of external experts, rather than remain under the direct control of government hierarchies. As mentioned above however, from 2013 onwards the construction and development of the Science *Central* site was moved into the overarching Science *City* body that has wider responsibilities for this part of Newcastle's economic strategy. According to one interviewee, this aimed to reduce confusion between the two teams and create a more coherent vision of how Science Central was at the centre of the Science City initiative, and overseen by representatives from the council and the university. Nonetheless, it illustrates how the city sought to address a common problem with these governance arrangements – a lack of co-ordination across agencies means it is difficult to achieve "public value" without creating comprehensive networks to *join-up* government (Dunleavy and Margetts, 2006; Stoker, 2006). Interestingly, its solution was to revert closer towards a Type I model of multi-level governance, in that the number of external agencies with responsibility for the site was reduced from two to one.

The Science City team developed the site masterplan (in fact, it developed two – the first document was scrapped after being deemed much too ambitious in the aftermath of the financial crisis, interview 11). This masterplan sets out the vision for the site, including the standards that buildings would have to meet in order to be approved for construction. It is notable that the council and university have their own, separate objectives for Science Central, and these became apparent during the drafting process for the masterplan:

One of the interesting things is to try and balance things from both sides, because obviously the council is about delivery, it's about jobs, it's about new housing, it's about all these things. Whereas the university's maybe a little bit more interested, well they are, in maybe the academic, the research opportunities. And obviously research and the commercial world don't always meet in the middle, so it's just understanding the difference (interview 31).

The same interviewee illustrated this point by explaining what it meant for housing on the site:

When we looked at it last year the university would have been interested in building houses with lime hemp, just to get an idea, and then sensor-up the building so that people living there would have been like little guinea pigs and they'd understand how the building and the fabrics work. Whereas the council would be, "What the hell's that? We just want solid houses built that people want to buy!" (interview 31).

Nonetheless, there was widespread agreement between the council and the university on how the site could be used strategically. Both parties were excited about the opportunity

to use it as a demonstrator for sustainability ideas and thereby boost the city's profile and help to attract science and technology investment:

I think there's a pretty strategic meeting of minds on general purpose and what that then means for actual delivery. We'll get debate on specific things that come up in the proposals, but I would say at the most strategic and the most vision-setting level, I would say there's a very good overlap of ambition and objectives (interview 11).

As such, although Newcastle council shares responsibility for Science Central (whereas Gelsenkirchen has assumed sole ownership of the Ebertstraße development), we should not conclude that this reduces its influence over the project. Instead, we should interpret this as an example of Newcastle trying to increase its implementation capacity through the sort of power-sharing arrangements that have benefited Gelsenkirchen in the past. Although *Politikverflechtung* in Gelsenkirchen is characterised most obviously by the council's vertical collaboration with other tiers of government (particularly the *Bezirksregierung*), Newcastle's horizontal relationship with the university has been instrumental in delivering the Science Central project. The council was quite open about its desire to work closer with the university, viewing it as an institution that is more likely to share its public service ethos than private companies and will also stay around in the city for much longer than most businesses. Indeed, Newcastle University "has a stated aim of playing a greater part in the civic life of the city" (interview 6) and fits the description of an "anchor institution" (Goddard and Vallance, 2013) that has a strategic interest in the long-term future of the locality. It might therefore be expected to have a valuable perspective on how sites such as Science Central could be developed successfully.

Interviewees were generally very positive about how the partnership had developed, with one council officer commenting that the university provides a very useful check on how the project is developing:

Having partners keeps you on your toes, doesn't it? It stops you just going down one route without thinking about how you're behaving. Where you've got a partner who's there and maybe checking you and saying 'now hang on, that's not what we agreed' – that's helpful in keeping that vision (interview 6).

Indeed, if the university and ONE had been unwilling to get involved in the project at the outset, it is unlikely that the council would have been able to purchase the entire site alone and develop a coherent and realistic plan for its development (interviews 6 and 31). Since this may have resulted in it becoming derelict like the former Vaux brewery in Sunderland, the council felt it was crucial to develop it together with the university – an organisation that shared its public service ethos and was not at risk of going out of business following the financial crisis.

After ONE was abolished, the remaining partners were able to bid successfully for £6m of European Regional Development Funding (ERDF), and thereby plug the looming financial hole that would have otherwise threatened the future of the entire project. Although the EU stipulates that ERDF projects need to meet high sustainability standards, the masterplan exceeded these demands significantly:

We've actually volunteered to give ourselves more of a straightjacket than was ever required of us. So even those funding mechanisms that I've talked about, none of those set a particularly high goal for us in terms of climate change credentials. So a lot of what we're doing is because we've chosen to do it (interview 11).

As such, although the European tier of governance was involved in funding the programme, it had very little influence over the design of individual buildings or their environs. An interviewee from the council was keen to stress that they did not need to "fudge around the edges" or re-draft their bid to ensure that it would meet the EU's

sustainability criteria (interview 6). Indeed, the EU's perspectives on Science Central were similar to those of the now-defunct ONE, in that they viewed it almost entirely as a driver for local economic development by nurturing the creation of new science and technology companies:

Their primary... goal was to get jobs, that's what they're buying with their money, rather than any sustainability (interview 11).

Therefore, although the final site masterplan sets high standards for the environmental sustainability and energy performance of buildings that will be constructed upon it, these were not the result of any pressure from outside the Science City partnership. The council no longer had to adhere to an RSS or other regional-level planning policy frameworks and the EU had little concern for stringent environmental performance standards. This meant that the council in Newcastle (albeit working together with the university) has been able to exercise significant autonomy over the project, and higher tiers of government exercised only very limited direction (in the form of the National Planning Policy Framework) over decisions related to Science Central. This situation has arisen primarily as a result of the flexibility inherent in Type II multi-level governance frameworks that enabled the abolition of regional structures and do not set out a detailed structure for planning policy.

Ironically however, it has given Newcastle greater freedom to develop and implement their own planning policies – something that would normally be associated with a Type II model. Indeed, a series of wider shifts within English local government have run in parallel with this additional autonomy. The introduction of a “power of general competence” in the 2011 Localism Act fits with the UK's government's overall rhetoric of increased “localism” and the ability to borrow money against future business rate revenue for infrastructure projects that would encourage private investment (Bentley and Pugalís, 2013). This rhetoric featured heavily in the National Planning Policy Framework that took effect from 2012, as local authorities were encouraged to develop their own strategies for economic growth. However, many councils found themselves in a dilemma: the power of general competence and other localist initiatives gave them significantly more autonomy, but the funding cuts introduced as part of central government's austerity programme mean that they have fewer resources and capacity to exploit this new freedom by themselves (Lowndes and Pratchett, 2012; Ferry *et al.*, 2015). In order to overcome this problem, senior figures in both the Labour and Conservative parties have published reports calling for municipalities to have additional powers to raise revenue (Heseltine, 2012; Adonis, 2014) and these thoughts were echoed by a committee of MPs (Committee, 2014). Meanwhile, councils such as Newcastle have sought to partner with local organisations such as universities and private companies in an attempt to increase their capacity. As the next part of this paper will show, this approach has enabled it to implement ambitious policies by proxy, although its role as a civic leader has been somewhat compromised as a result.

	Gelsenkirchen	Newcastle
Vertical structures	Increasingly less autonomous within a structured, multi-tiered vertical framework	Increasingly more autonomous within a more dynamic and unstructured framework
Horizontal structures	Multi-purpose local authority has sole responsibility for Ebertstraße redevelopment	Task-specific agencies responsible for Science Central and wider regeneration plans

Table 4: Changes in the sub-dimensions of multi-level governance types as applied to Gelsenkirchen and Newcastle

Nonetheless, planning policy in Newcastle still operates within the context of largely characteristically Type II features, not least the ability to develop a shared economic development strategy with neighbouring Gateshead, the reliance on a single-purpose agency to oversee Science Central and the dynamic nature of regional governance. As such, although some aspects of Newcastle's multi-level governance arrangements have evolved in recent years, it still resembles the traditional Type II model to a large extent.

Table 4 is based on Table 3 earlier in this paper. It illustrates how there is some convergence in terms of the autonomy of local authorities in planning policy. However, the cities now operate within even more contrasting contexts in terms of the *vertical* planning frameworks, and the extent to which the local authority has sole *horizontal* responsibility for decision-making. In Newcastle and Gateshead there has been a veritable plethora of task-specific agencies that have had some association with Science Central, whereas Gelsenkirchen council has retained the management of Ebertstraße in-house, despite some public criticism of this approach.

Notably, the drivers of these changes in both cities have been predominantly economic, and exacerbated by the impact of the global financial crisis. This led to both cities experiencing financial austerity and having to rely on external organisations to support their major developments: Gelsenkirchen is now heavily dependent on *Land* funding and its activities are closely monitored by *Bezirk* officials, whereas Newcastle council had to partner with ONE and the university in order to ensure that the Science Central site did not fall into disuse. The only exception to this was in the case of Hans-Sachs-Haus, where public pressure and the election of a new mayor led to the council taking over responsibility for refurbishing the building. This last example suggests that although economic and financial considerations can be instrumental in shaping governance arrangements, local *politics* plays an important role in determining Gelsenkirchen's approach to planning and development. Similarly, because the Science Central example in Newcastle concerns public institutions (the council and the university) assuming responsibility for a key development site in order to prevent it from becoming a wasteland, we can conclude that the state was still the most important actor in shaping planning policy in both countries. With that in mind, the paper now analyses the extent to which planning policies in Gelsenkirchen and Newcastle exemplify the typical policy styles of Germany and England respectively, thereby explores the influence of the state over decision-making from a different perspective.

Policy styles and planning policy

Gelsenkirchen

The typical German policy style suggests that decision-making on planning developments will rely heavily on agreed standards with little room for manoeuvre or negotiation, prioritise "state of the art" environmental solutions above financial considerations and illustrate the state's authority over other actors in the policy-making process. As this section of the paper will show, there is certainly some evidence to suggest that the Ebertstraße redevelopment was characterised by these dynamics. However, Gelsenkirchen's model is undoubtedly in flux and moving towards the English characterisation in some areas, primarily because the financial crisis has placed additional pressures on the local economy in general and the councils' budgetary position in particular. For example, the council is adopting more persuasive tactics with local businesses in some areas, and (most notably) officers need to demonstrate that the installation of environmental technologies is supported by a business case – they cannot simply build them into designs on the assumption that they are the "right thing to do". This section groups these various characteristics into two dimensions: the extent to which the council relies on hierarchy rather than engagement or compromise with societal actors; and, its preference for state of the art solutions versus its insistence on

sound business cases that mean the city does not lose money as a result of the environmental features within new or refurbished developments.

Hierarchical standardisation rather than engagement and compromise

Since the Ebertstraße redevelopment is owned and managed entirely by the city of Gelsenkirchen, and Hans-Sachs-Haus is occupied solely by council employees and party-political staff, we might expect the state to adopt a very hierarchical and standardised approach to this project. This is because the council did not need to negotiate with a private developer, and therefore there was no question of it tempting outside investment by reducing its sustainability demands. However, this situation does not preclude internal conflict over the new design, in that departments such as Property, Regeneration or Environment are likely to want the development to adhere to stricter standards than the Finance team, for example (interview 16). Moreover, the site's location in the city centre means that the council needs to take account of the neighbouring buildings, including their owners and tenants, in its planning decision. And, as we have seen earlier in this paper, the political history of Hans-Sachs-Haus led to the council having to respond directly to public opinion and reversing its decision to demolish the building.

Nonetheless, there are a number of hard-and-fast planning rules, which derive from both the federal and the local government, that apply to the Ebertstraße redevelopment. At the federal level, the 2009 Energy Conservation Act sets out a series of non-negotiable standards for new developments and the refurbishments of buildings constructed before 1990. The council has its own experts in the planning department, who provide advice to both public and private developers on how to meet these standards (interview 23). As this paper has already outlined, this law requires new and refurbished buildings to meet stringent levels of energy performance (for example, by increasing insulation requirements) and directs developers to reduce the building's reliance on external energy sources and instead incorporate renewable electricity installations into the finished property (interview 26). Although standards at the state level are no stricter than this federal law (even for those regeneration projects that are part-financed by *Land* funding), property professionals can find it very demanding to meet the requirements of the Energy Conservation Act, particularly when then apply to the refurbishment of an historic building such as Hans-Sachs-Haus:

It is difficult to upgrade an old building so that it chimes with the new energy saving regulations. It is also often difficult in terms of the physical construction of the building. In other words, if I pack up an old house in a plastic bag so it does not produce more emissions, I often encounter problems with the building's physical structure. So it's very, very important that we are careful... Because, for example, I might have problems with moisture, but we will only know this once the building is in use, if there are 320 people in there who breathe in and out (interview 23).

The city of Gelsenkirchen is also in the process of transposing some of the broader principles within the Energy Conservation Act into its own planning regulations. This would clarify the situation to potential developers and ensure that they are aware of the standards that any planning application would need to meet (interview 15). The council has also taken sustainability requirements further than is required by statute for any new developments in those parts of the city that are owned by the state development corporation. All new buildings constructed on this land must include photovoltaic panels and developers must avoid "major shading" of south-facing roofs and walls to maximise solar access (Jung *et al.*, 2010). Although these panels are funded partly by a state-wide programme to promote the construction of sustainable homes, the buildings belong to private landlords rather than the council (interview 14). In this way, the city is using traditional hierarchical regulations in order to further its *Solarstadt* branding and objectives. Since the state owns this land, it is able to exercise hierarchical authority much more easily: if it tried to institute similar requirements for new buildings on private

property, a developer would almost certainly be able to overturn them on appeal because they do not fit within the local framework (interview 20).

Similarly, after the council assumed responsibility for Hans-Sachs-Haus in 2004, it was in a position to take such a hierarchical approach to the sustainability aspects of the refurbished building. Indeed, the initial competition for an architect indicated the importance of design features that mitigated climate change: the council warned all bidders that it would not contemplate the use of materials such as PVC or unsustainable timber (interview 26) and also listed sustainability as a criterion for bidder selection (interview 23). Interestingly however, the successful company (GMP) was just as committed to sustainable construction as the council, and suggested a number of innovative ways in which the refurbished building could meet the requirements of the Energy Conservation Act (interviews 23 and 26). Not only did these include the use of photovoltaic panels on the roof and grey water recycling, but also – at GMP's instigation – the project investigated whether the building might be sitting on a geothermal energy source from the former coal mine underneath the site. This investigation proved successful, and the refurbished building now includes an underfloor heating system that is connected to a geothermal source 70 metres underground. Similarly, GMP proposed that much of the south-facing side of the building be covered by a glass façade in order to maximise the passive solar benefits within the building and reduce demand for lighting and heating (interview 26). The fact that these features were suggested by the architect, rather than council employees, illustrates that Gelsenkirchen is open to ideas from other actors and does not always operate in a hierarchical decision-making mode.

In addition, the highly political nature of the Hans-Sachs-Haus building, together with the importance of the entire Ebertstraße project for the future of the city centre, meant that the council needed to demonstrate transparency in its decision-making and project management. This required significant engagement with the organisations occupying neighbouring properties and the wider public. For example, large and prominent Lutheran and Catholic churches overlook Heinrich-König-Platz, and there was some initial concern about whether the work would affect the fabric of these historic buildings (interview 17). A number of local businesses, such as an ice-cream parlour that experienced a significant drop in sales because of the amount of dust produced during the construction phase, were not particularly happy with the plans (interviews 17 and 23). More broadly, other groups within the city argued that the money should have been spent on schools or kindergartens rather than redeveloping the city centre. These criticisms were bolstered by the poor management of public works projects elsewhere in Germany, which fed a growing suspicion that "the council can't do it, or local government can't do it" (interview 23).



Figure 5: The "blue box" to engage with stakeholders about the Ebertstraße redevelopment

To ensure a continuing dialogue with local residents, the council erected an information centre (the "blue box") towards the northern end of Ebertstraße, where people could find out more about the project, and put their questions and concerns to officers (interview 17, see Figure 5). This pro-active move by the council, which also enabled it to respond quickly to stories in the local media, illustrates how it sought to communicate with other societal actors and not rely solely on hierarchical decision-making processes. Similarly, after the council agreed to refurbish (and not demolish) Hans-Sachs-Haus, officers engaged with the local pressure group (*Bürgerforum*) to ensure that they were kept up-to-date with decision-making (interview 23). This did not extend to their hands-on involvement in project management, on the basis that "the more transparent and democratic such a big project becomes, the more difficult it is to implement. Too many cooks spoil the broth" (interview 23). Nonetheless, the council took to unusual step of inviting opponents of the Heinrich-König-Platz redevelopment onto the jury that decided which bidder should be awarded this contract. This helped to ensure that,

Actually, the project was pushed from various corners, from council staff and from politicians, but also from citizens... Everyone came together during the process of involvement and information provision. So those who we saw previously as the biggest opponents were actually in the jury for the competition, and then they suddenly became supporters. In the end, the feeling around the project was very positive and now there are big expectations for it (interview 17).

The council attributes this success to its charm offensive and the fact that it did not rely solely on hierarchical processes to implement the project. This shift towards greater citizen consultation in planning policy sits within a broader federal framework that now requires local authorities to consult with their citizens about major planning developments. This dates back to a state law of 1971, which subsequently became a federal requirement five years' later (Bückmann and Oel, 1981). Although the law only applies to major new developments, which meant that it did not cover the Ebertstraße project, the principle of *Bürgerbeteiligung* (citizen involvement) has gained wider currency in Germany over the last four decades, and one interviewee in particular felt that politicians are now much more likely to take account of the wider public in planning policy decisions:

The planning process here is a very open process, you would have to say that. As part of the planning process there are always phases for public involvement. That means anyone can say anything about the plan, within a specific framework. And their views have to be considered: and if they are rejected there needs to be a justification for that (interview 15).

The participants in this process are mostly those who are directly affected by any potential development, but it nonetheless ensured that the churches, local businesses and the *Bürgerforum Hans-Sachs-Haus* could make their voices heard about the Ebertstraße projects. More generally, councils are now required "to develop their planning policies within the framework of citizen involvement" (interview 23). This sits in stark contrast to any idea that the local state can impose its will in a hierarchical fashion, and it is notable that Gelsenkirchen went beyond its statutory duties to involve wider societal actors in its decision-making. In the most striking example of its shift towards horizontal engagement rather than hierarchical regulation, the council has begun to allocate *Land*-provided funding to help property owners in the city centre finance the renovation of public-facing façades and courtyards. Around 15% of buildings in the centre of town are empty, which means that attempts to improve the look and feel of the area can be difficult: in a tenant's market, there is little incentive for landlords to increase rents in order to finance property upgrades. As a result, rather than stipulate that the buildings must meet a certain energy performance standard after the

renovations are complete³, landlords only need to be informed about the sustainability improvements they could make in order to receive the money – the council does not attach any environmental strings to this funding:

Together with the environment directorate, we have developed this process to provide advice on renewable and clean energy. And we've said the property owners can actually get this investment if they allow themselves to be advised. They don't have to take it on board, but we are creating awareness of it (interview 17).

The council decided that having environmental pre-requisites for this funding would mean that landlords would not upgrade their properties and the city centre would not improve its appearance. Indeed, it is notable that "very few" have subsequently installed features to improve the energy performance of buildings, and other ideas, such as putting green roofs atop garages, have also failed to take off in the city centre (interview 17). In that sense, it is probably fair to assume that the council's fears would have materialised – but for the purposes of this thesis it illustrates how Gelsenkirchen is relying more on citizen engagement and persuasion than was perhaps previously the case. The council did not expect the traditional "German" approach of hierarchical authority to be effective, largely due to the wider economic situation within the city.

However, it is crucial to note that financial and economic considerations were not the only driver of a shift in policy style. Alongside the statutory duty for Gelsenkirchen to engage with local residents and businesses about the future of Hans-Sachs-Haus and Heinrich-König-Platz, the council felt strongly that that this was "the right thing to do" – for normative democratic reasons and also to increase the likelihood that the final project would be popular and successful (interview 17). The council may have been keener to act in this way because of the controversial history of Hans-Sachs-Haus and the importance of Ebertstraße for the future of the city, but this nonetheless suggests that the council embraced citizen engagement rather than hierarchical control primarily for *political* reasons. Unlike some of the other drivers for a shift in policy style therefore, it may outlive the era of austerity – if indeed the economic and budgetary situations in Gelsenkirchen and Newcastle are able to return to anything resembling normalcy in the foreseeable future.

State of the art solutions versus "Best Practicable Means"

Traditionally, Germany's environmental policy style has relied on the "best available technologies" or "state of the art" solutions because policy-makers have tried to rely on advanced ideas that can reduce pollution and promote the development of green industries. Indeed, this twin-track approach has been credited with creating thousands of jobs, as the German government integrated its sustainability and economic development strategies (Lütkenhorst and Pegels, 2014). This preference for high-quality solutions contrasts with the UK's more traditional reliance on "best practicable means". Interestingly, Wurzel (2002) identified a convergence of these two ideas at the national level into what he called "best available technology not entailing excessive costs" (which was subsequently adopted as a compromise EU principle). Nonetheless, we might expect Gelsenkirchen to place a higher value on the technical environmental performance qualities of the redeveloped Hans-Sachs-Haus than Newcastle would do for Science Central and the Core Building. Similarly, this characterisation would suggest that Gelsenkirchen has comparatively less concern for the financial costs of such solutions. As we shall see however, this was not necessarily the case, as the climate of budgetary austerity meant investment decisions in Gelsenkirchen had to be supported by robust business cases, whereas the symbolism of sustainability features on Science Central's Core Building proved more attractive than any financial return they might deliver.

³ Since this money is only earmarked for external renovations, and not whole-property refurbishments, these projects are exempt from the Energy Conservation Act requirement that stipulates the refurbishment of any pre-1990 property must meet the same standards as a new build.

In line with the “state of the art” characterisation of German environmental policy, the redeveloped Hans-Sachs-Haus incorporates a range of sustainability features – and in this sense it is a more ambitious project than the Core Building in Newcastle. As one interviewee put it:

Hans-Sachs-Haus is already heated by renewable energy, by geothermal and district heating – and the district heating system is supplied 100% by waste incineration. We also have a reusable water system, in other words a grey water tank that supplies all of the toilets in the building with rainwater... And of course we have photovoltaics on the roof (interview 23).

Figure 6 shows how much of the roof of Hans-Sachs-Haus is covered in PV panels. Taken together, all of these features exceeded the requirements of the Energy Conservation Act and illustrated the council’s belief that it should act as a role model for other local actors in terms of its commitment to sustainability (interviews 20, 21 and 23). Other aspects of the redeveloped Hans-Sachs-Haus include planting greenery on those parts of the roof that were in shade, installing low-energy lighting that is triggered by movement sensors, and a conscious decision not to include any space for car parking on the site. All of these features demonstrate how the council wanted to show that it took these principles seriously and set an example to other actors in the city. The building’s innovative heating and cooling systems also demonstrate how the council was keen to adopt the most sustainable support systems for its occupants:

I haven’t got any air conditioning in the building, because air conditioning systems just gobble up electricity. But we have got a cooling system, and we have also provided a different system, a heat-exchange system, which... reduces energy consumption significantly (interview 23).

The cooling system begins to function when the temperature in some parts of the building (such as the glass-fronted south-facing rooms) rises above a set temperature. This triggers a process in which cold mains water is sent through the underfloor heating system – the same pipes that provide geothermal warmth during the winter months. In addition, hot air in the building is sucked out through the heat exchange system overnight, and replaced with fresh air from outside.

This reliance on advanced technological solutions builds on Gelsenkirchen’s legacy of exemplar sustainability projects that stretches back to the mid-1990s. These initiatives included the installation of what were then the world’s largest solar panels on a new business park constructed mid-1990s and the development of several *Solarsiedlungen* (solar estates) around the city. These illustrated how Gelsenkirchen wanted to embrace state of the art green industries and hoped that other actors would follow its lead and stimulate the local market further (interview 20). By ensuring that the newly refurbished, iconic council building also incorporates such advanced features, the city has raised its profile as a beacon of sustainability, to the extent that one officer was “pretty sure that this town hall will become important across Europe” (interview 23).

Indeed, it is worth re-iterating that Gelsenkirchen council did not have to restore Hans-Sachs-Haus – and it certainly did not need to install quite so many environmentally-friendly features in the refurbished building. Instead, despite its position as a heavily-indebted authority, it wanted to get involved in a project that would have bankrupted any private investor – and indeed nearly did in its first incarnation (interview 23) because it saw Hans-Sachs-Haus as an opportunity to exemplify its commitment to sustainable technologies and act as a model for others to follow. In other words, there appears to be an overwhelmingly preference for adopting state-of-the-art solutions rather than “best practicable means” (BPM), or even Wurzel’s categorisation of “best available technology not entailing excessive costs” (BATNEEC).



Figure 6: Photovoltaic panels on the roof of Hans-Sachs-Haus

However, within Gelsenkirchen more generally there has been a shift towards ensuring a financial return on investments over the medium term. This stems partly from the council's precarious budgetary position, but it is notable that sustainability features are often seen as a way of meeting this budgetary requirement, by reducing energy consumption (and therefore expenditure) or generating income through feed-in-tariffs. As such, adopting green technologies serves a dual purpose, even if it can take some time to generate a return on the initial investment:

We do it because we think it's the right thing to do. We're not required, for example, to install geothermal heating systems. We don't have to put PV panels on the roof. But we do need to reduce energy costs. And, as a rule, that is not the easiest thing to do... because we have very old building stock that we have to maintain, we rarely have projects that are completely new builds, and of course we have no money. Because everything we do in this area costs money, and the payback period is always very long (interview 23).

Similarly, the principle that any sustainability investment should reap a financial return is also incorporated into the appraisal of funding bids to the *Land* and forms a key part of new federal accounting requirements that oblige local authorities to consider the whole-life costs of assets when taking investment decisions (interview 19). Similarly, the *Bezirksregierung* considers proposed construction projects primarily in terms of a cost-benefit analysis (working on the basis that energy prices will double over the next decade) and officials will only judge whether they are feasible from a technical

perspective if an application passes this initial hurdle (interview 27). Taking its cue from the *Land*, the city of Gelsenkirchen stipulates that the payback period for investment in sustainability (or indeed any other) features is ten years (interview 25). As the above quote indicates, the costs of retrofitting old buildings would appear to outweigh the potential savings in energy costs over this relatively short timescale, and therefore we might expect the council to be much less ambitious.

However, various other factors have ensured that the authority does approve cutting-edge installations. The most important of these is the Energy Conservation Act discussed above, which requires substantially refurbished buildings to meet the same level of energy performance as a new construction. This meant that the council had to spend a significant amount of money upgrading Hans-Sachs-Haus in order to comply with the law. A second factor is Germany's federal law that provides subsidies to small-scale renewable electricity generators through feed-in-tariffs (FITs). This initiative, which dates back to the early 2000s in Germany, involves the Government paying a fixed price for every unit of electricity that is generated through PV, wind power, biomass, hydropower or geothermal sources. Energy companies are then required to buy this power at this fixed rate over a 25-year period (Mendonca *et al.*, 2010) and redistribute it through their electricity grids. This scheme has enabled Gelsenkirchen council to generate an increasing amount revenue from the sustainability features it has installed on public buildings. Indeed, the authority now has a policy that all public buildings *must* install PV panels when they are either refurbished or built from scratch, provided they will pay for themselves over the course of a decade. Where this business case does not stack up, the building has to be given a green roof instead. Due to advances in solar technology over recent years, this means that nearly all unshaded south-facing roofs are now covered with solar panels when the building is refurbished – and the council begins to reap a financial return on this investment within ten years of their installation (interview 25).

Therefore Gelsenkirchen's apparent enthusiasm for installing all manner of sustainability features in the refurbished Hans-Sachs-Haus needs to be analysed in this wider context of statutory federal regulation and the council's stipulation that any such investment should pay for itself within a decade. In other words, the city no longer embraces the idea of "green at all costs", largely due to the financial constraints within which it has to operate and the fact that it is legally obliged to install advanced sustainability features into new and refurbished buildings. This marks a shift away from the position in the mid-1990s, when the council sought to put the solar industry at the centre of Gelsenkirchen's regeneration plans and invested in a wide range of expensive exemplar projects to demonstrate its commitment to these new technologies. Instead of preferring state-of-the-art solutions, council planners now have to take much more account of their long-term costs. However, because the sustainability features within Hans-Sachs-Haus go above and beyond what is required by statute, this does not mean that Gelsenkirchen should be characterised as relying on the "best practicable means" for resolving environmental problems. Nonetheless, its ideas do correspond closely to the idea of "best available technology not entailing excessive costs" because of the need to develop a financial business case for any investment.

Newcastle

This next section sets out how planning policy in Newcastle, with a particular focus on the Core Building within the Science Central development, maps on to the typical English policy style. To ensure comparability with Gelsenkirchen, it concentrates on the same two dimensions: the extent to which the council relies on negotiation, engagement and horizontal decision-making or vertical hierarchical authority; and its preference for "best practical means" as opposed to state-of-the-art solutions. If Newcastle exhibited characteristics associated with the traditional English style we would expect it to rely more on horizontal procedures than Gelsenkirchen, in that the state would not exert its

hierarchical authority to the same extent. We might also anticipate that the council would only include sustainability features within the Science Central development if they felt these solutions were the best practical way resolve a particular problem and were supported by a hard financial business case.

Hierarchical standardisation versus engagement and compromise

Overall, local authorities in Germany and England operate under similar statutory requirements to involve residents in planning decisions. In both countries, most of this happens when the council sets out its overall planning framework, when citizens are invited to contribute and suggest modifications – either as private individuals or through organised interest groups. The council has to take account of these representations, and if subsequent applications fit within the overall planning framework they are generally approved (Heidenreich, 2008).

It is extremely rare that any comments on Newcastle's planning policy will refer to its potential implications for climate change mitigation – although the increased frequency of major floods has meant that adaptation is becoming increasingly important (interview 2). Instead, people are much more likely to raise concerns about the transport, parking or noise implications, or the architecture of a new building. Moreover, since most comments are made about individual applications (rather than the planning framework within which they are supposed to operate), it is often the case that they cannot really influence the overall development. This is because if an application fits within the context of the overall framework, the council committee does not have much power to refuse planning permission – if it tried to block the project, the developer is much more likely to win an appeal (interview 2).

Science Central's overarching planning framework is represented by the site masterplan, which means that developers should keep to the principles espoused therein when they apply for permission to construct individual buildings. In the words of one interviewee, the masterplan sets out the

Fundamentals, aspirations and vision for the site... [It] gives us a feel on design, look and feel, sets the environmental criteria and credentials for the site, so whether it be BREEAM ratings or sustainable forms. So [it is] trying to set the parameters of the site in terms of what the planning process can control (interview 31).

As such, the masterplan for Science Central shapes the type of buildings that may subsequently be constructed on the site. This principle also applied after the council bought the land that had been owned by One North East before its abolition:

There was a condition in there that they were selling it to us on condition we adhered to the masterplan. So what we couldn't do was basically get it, have a meeting and say "this isn't working, let's just sell it to Tesco and make some money" (interview 6).

Therefore, the masterplan does contain a number of criteria that developments should meet. Local authorities are obliged to consult on these framework documents, and Newcastle did more than it was required to try and stimulate local interest in the whole Science City agenda:

It was statutory, but it was a fairly pro-active exercise as well, so it wasn't just pitching up telling people we're going to be there and hope they turn up – there was an effort made to go and engage with people (interview 31).

Indeed, an initial masterplan for Science Central was scrapped after it became clear that its expectations for economic development were over-ambitious. This had been based on an assumption that "you build it and they come", and therefore proposed that the council commission dozens of large new buildings because there would be sufficient

demand to fill them with commercial and residential customers. Following the financial crisis however, the new economic environment meant the partners wanted to wait until sufficient demand materialised before beginning the process of constructing anything, otherwise they feared being saddled with large, empty and very expensive buildings in the city centre (interview 11). Nonetheless, although its economic ambitions were scaled down, the environmental requirements in the revised masterplan remained largely intact. These included the provision of bus lanes, cycle parking and pedestrianized areas (interview 8), as well as stipulations that buildings must meet certain energy performance criteria.

Notably, the masterplan was developed together with the university, thereby illustrating that the municipality was not the sole actor associated with the design of this framework document. This contrasts with the situation in Gelsenkirchen, where the local authority took full ownership of the Ebertstraße project and was solely responsible for determining its sustainability features. Moreover, although the masterplan was initially developed by the university and the council, the global engineering consultancy Arup also provided input into the final document. Although some have argued that the expertise of Arup's consultants improved the chances of success for the whole Science Central initiative (Goddard and Vallance, 2013), one interviewee felt that their influence may have watered-down some of the partners' sustainability objectives:

So I could see at the time what the university requirements were, what the council requirements were, but then seeing the pressures from the developer also to say "yeah, ok, this is all right, but we do have to have something that is going to attract businesses, and, you know, generate wealth"... So the university has got its high ideals of it being an exemplar sustainable site, the Council kind of say "yes, we do too, with some caveats," and then you've got the developer that says "yeah, ok, we appreciate all of this, *but* there are some hard economic facts and we need to deliver" (interview 13).

The above quote is instructive, in that it highlights the nature of discussions around the formation of the masterplan, and how the council's sustainability ambitions were not as high as those of the university. More importantly, it shows how the council was persuaded by an external body to compromise its ambitions in order to reduce the financial risk of the project. The same interviewee illustrated this point with the example of car parking:

Clearly, cars *per se*, and bringing them into the city centre, are not desirable on a sustainability exemplar site. But, in order for the site to be viable, businesses need to want to come and locate there, and if they don't have car parking they might not want to come. So the compromise that was reached was that car parking would be provided in the first instance, because it's a huge site and there's lots of space, but that that would be whittled down as the site got developed, and there may or may not be a multi-storey car park in the final [analysis], depending on how far that no car policy could be pushed... So it's kind of managed down and, "let's test the water with how far we can get rid of cars" (interview 13).

Although there is significantly more space at Science Central to accommodate cars compared to Ebertstraße, and it will be occupied by organisations other than the council, the contrast with Gelsenkirchen could not be more striking. The German council exerted its hierarchical authority by not countenancing the construction of a car park on principle, even underneath Hans-Sachs-Haus where there would have been sufficient space. Conversely, its English twin city's involvement of external actors in the development of the masterplan led directly to the inclusion of a car park at Science Central. Therefore, both in terms of decision-making *processes* (the more horizontal approach that engages more external actors) and *outputs* (the decision to include a car park), Newcastle gave greater prominence to the developer, and its views on the interests of potential site users. These examples serve as classic case studies of the different policy styles normally attributed to Germany and England and suggest that they can be identified in major planning decisions. Moreover, in spite of assurances from

interviewees within the council and Science City that the sustainability criteria outlined in the masterplan could not be compromised, there was some suspicion from the university that these rules might be bent in future:

The masterplan just sets down a notion of what the site looks like and some sort of planning benchmark, if you like, and some overall planning rules. But then each individual bit that gets done will have to have its own individual planning (interview 13).

Similarly, another interviewee felt that the masterplan's rules on sustainability might be more flexible once a large part of the site was developed:

I suspect it may well be as we get further down the line, in sort of 10 or 15 years when we've got the core of the site developed, there might be a bit of weakening a bit round the edges, because we've achieved what we really set out to do apart from a small bit, but nobody's wavering yet (interview 6).

Although the quote above reiterates that there was no sign of the partners agreeing to lower sustainability standards at the time, there is room for manoeuvre within the overall framework. For example, it is notable that green roofs on new buildings are not a necessary precondition for securing planning permission: the masterplan merely states that this is to be "encouraged" (interview 31). Once again, this illustrates how Newcastle might be prepared to compromise over certain sustainability features, and engage horizontally with stakeholders rather than exert hierarchical authority. An officer from the Science Central team acknowledged that they now had to communicate with potential developers to agree what might make the site a more appealing investment prospect. He did stress that some companies might be attracted by its status as a leading sustainability location, but nonetheless recognised that the masterplan only provided a framework within which potential investors would have to develop their planning applications (interview 31).

Although the university and developer exercised some influence over the masterplan for the whole site, both parties were clear that the council should take responsibility for designing the Core Building:

They appreciate that ultimately it's a council risk, council-owned building (interview 31).

As such, the Core Building should be interpreted as a council development, in same way as those buildings that will accommodate academic staff are the university's responsibility. Indeed, the Core Building does contain some notable sustainability features that show how the council was able to exert its influence over its design. For example, it has an "excellent" BREEAM rating; it collects rainwater from the flat roof areas, which is stored in an underground tank and then pumped back into the building to flush the toilets; there are photovoltaic panels on the roof; most of the building has a natural ventilation system rather than air conditioning; the open-plan design allows for a greater use of natural light than would otherwise be the case; and England's largest "living wall" has been erected on one side (interview 31, Journal, 2014, see Figure xx). These features, and the extent to which they demonstrate that Newcastle prefers "state of the art" solutions to "best practicable means", are discussed in the next subsection.

The council's position on sustainability features within the Core Building can also be contrasted with the university's plans for its first structure on the site, the SAgE Building, which is due to open in 2017. The university did scale down its initial ambitions, due to the "extremely high costs" associated with this and the fact that technological developments would mean it does not remain such an exemplar for very long (interview 13). Despite this, it will still be significantly more advanced in sustainability terms than the Core Building. Furthermore, in keeping with the university's mission to undertake research that is applicable in the wider community, it will function as a living laboratory

(or “urban observatory” (interview 31)) to identify which technical or engineering solutions are most effective in achieving sustainability objectives:

So the building is about experimenting with different things, like different forms of cladding or, you know, different technologies, being able to have the facility to implement those within the building as they arise. We want to study the people part of the building as well, the inhabitants of the building and how they respond to different, to changes in the building. So in particular, practices that are considered sustainable – actually, do the people respond well to those? Do they actually just override the systems? (interview 13).

Therefore, although the building might not incorporate the most cutting-edge technologies at the outset, its flexible nature will mean that the design can be improved in response to how it actually functions. In addition, the data that it produces on user behaviour and the effectiveness of particular solutions should inform the design of buildings in the future and thereby contribute to sustainability initiatives outside the Science Central project. Interestingly, we can see how this attitude also encapsulates the “English” policy style of horizontal engagement – to an even greater extent than the council’s approach. By ensuring that the building can respond to its occupants’ behaviour and technological developments, the university is effectively continuing to consult (albeit implicitly) with relevant stakeholders *after* it has been constructed. Although Gelsenkirchen could upgrade the sustainability features of Hans-Sachs-Haus in the future (for example, it might replace the existing PV panels with more efficient solar technology once it becomes available), these flexible principles are not integrated into its core design.



Figure 7: The “living wall” on the side of the Core Building (source: Newcastle Science Central (artist’s impression))

This principle of engagement applies more widely in Newcastle’s planning policy, especially because the council no longer needs to adhere to strict hierarchical standards on sustainability following the abolition of the Regional Spatial Strategy (RSS). The RSS stipulated that at least ten per cent of the energy requirements for new developments would need to be come from renewable sources, and the buildings would have to meet “very good” standards for BREEAM. These standards were subsequently incorporated into the Unitary Development Plan that set out the framework for planning decisions in the city (interview 2). However, the abolition of RSS means that the council cannot

enforce these regulations, which puts developers in a much stronger position and diminishes the potential for hierarchical state regulation, particularly in a deprived part of the country. This is because local authorities have tried to encourage investment in their areas and are essentially competing in a “race to the bottom” on sustainability and other standards:

In the north east we are desperate to get development, we are desperate to have employment, we are desperate to have housing and everything else. And we do not have the luxury of those areas down south where there is enormous pressure for development... We’ve got to be careful, because there is a dire amount of development taking place in the north-east, all of the councils are competing with each other... Councils are very concerned about pushing development away. And viability therefore is an enormous issue. You don’t want to load too much on developments so that a developer decides, “well, in that case I’m just going to go to North Tyneside, I’m going to go to Gateshead.” So there is that kind of a concern, and therefore at the end of the day, when all the chips are down, the council may sometimes relax all these standards. That’s the reality (interview 2).

Newcastle is keen to promote its image as a “green council” and its Local Plan now asks potential developers to keep to the sustainability requirements that were set out within the old RSS and consider issues such as climate change mitigation (Newcastle City Council, 2014). However, developers are not statutorily obliged to do so and therefore they could appeal against any council decision to reject a planning application on the grounds that it does not meet these standards. Although the council has managed to agree strict criteria for new developments in some locations, this is not something that it feels able to translate into a broader policy that is binding across the city. As such, climate change is incorporated into planning through a horizontal and flexible arrangement in which developers can exercise significant influence:

The council would love to be green... but the reality sometimes is that gets watered down further along the line... [Sometimes] we do succeed, but it’s by negotiation (interview 2).

Therefore, it is clear that Newcastle’s approach to development planning, and its implications for climate change, is much more closely aligned to the English policy style than Gelsenkirchen. Indeed, recent legislative changes, which have weakened the council’s ability to require developers to incorporate sustainability features into the design of new buildings, have meant that it embodies this characteristic even more than was previously the case. Its involvement of other stakeholders in decision-making and reliance on negotiation contrasts with Gelsenkirchen’s more hierarchical approach and demonstrates the fact that the two policy styles are not converging on this dimension. A key reason for this is Gelsenkirchen’s traditional reliance on the local authority taking direct responsibility for public projects. This has meant that the Gelsenkirchen is far less dependent on other actors to achieve its objectives and therefore does not need to engage with them to the same extent. However, this position is beginning to change due to a recognition that “wicked issues” requires the active support of other stakeholders. For example, Gelsenkirchen is informing city centre landlords about the benefits of sustainability retrofitting, but not mandating that they install any such technologies in order to receive council funding to renovate their ageing facades. Nonetheless, it remains far removed from Newcastle’s typically English approach that lacks hierarchical standards and relies much more on negotiating with developers to agree planning decisions.

State of the art solutions versus “Best Practicable Means”

The final part of this paper considers how planning policy in Newcastle and Gelsenkirchen has a preference for relying on “state of the art” solutions or “best practicable means” to address climate change concerns. Interestingly, a number of council officers discussed the problems inherent in calculating the costs and benefits of potential climate change solutions. This referred to mitigation (where one officer pointed out that such

calculations do not take account of any technological failure (interview 2)), as well as adaptation:

The concept of forming planning policy on an evidence-based approach – we don't have the evidence to justify additional capital spend for adaptation. When it comes to the crunch in negotiations on planning with builders and developers we can't say 'that drain needs to be full for a one in 200 type storm event (interview 1).

Similarly, another interviewee pointed out that the lack of common measurement standards for sustainable buildings meant that it was difficult to factor these considerations into a business case for including them:

There is no industry benchmark for what sustainability is. And as poor substitutes for that commonly-agreed benchmark we use things like BREEAM and these kinds of measurements – which are fine, you know, they measure very specific things for what they're required to do. But in the absence of anything else they tend to be used as labels for things that they're not really designed to be for (interview 11).

The interviewee contrasted this confused picture with the clarity of economic data such as land prices or employment figures, which means that it is possible to calculate the costs of certain solutions but very difficult to determine their value in terms of potential sustainability benefits. These problems contributed to the fact that Newcastle does not use strict financial criteria when deciding which features to include in the design of its buildings. In addition, although the UK Government has introduced feed-in-tariffs, British energy producers receive less per unit of electricity than their German counterparts and they do not enjoy as much sunshine. This means that the payback period for installing PV panels in the UK is much longer: an average of 18 years according to Edwards and Vaughan (2012), compared to less than a decade in Germany. Thus, although the Core Building does have a number of photovoltaics on the roof, their installation was not supported by a cost-benefit analysis and detailed business case:

I don't think we've gone into that detail at all. I think it's probably just a design team-led decision on PV and location... I don't think it was financially driven. Obviously there'll be an element of payback on that but I don't think there's enough on there to make a huge dent... at the same time I don't think it's just a tokenistic effort. It was a conscious decision to put them up there (interview 31).

As such, Newcastle decided to install photovoltaics on the Core Building because they felt it was the "right thing to do" and would support the idea that Science Central was a beacon of sustainability. Perhaps surprisingly, this is closer to the principle of "state of the art solutions" than Gelsenkirchen's view that PV panels need to pay for themselves over the forthcoming decade. As such, it suggests that the characteristically English reliance on "best practical means", or even the compromise position of "best available technology not entailing excessive costs", may not apply.

However, the financial costs of the entire Science Central project were still a crucial consideration for the council. As mentioned earlier, it rejected the initial masterplan on the grounds that it would be an expensive "white elephant". More importantly, the site was deemed an Accelerated Development Zone in Newcastle's City Deal with central government, which means that the council can keep all of the business rate revenue that is generated from buildings that it encourages and promotes on the site. As part of the Tax Increment Finance scheme it can also borrow against future income from this source for other capital projects – indeed, some of the future investment in Science Central will be funded through this initiative (interview 6). This increases the council's incentive to attract investment to the site, and it views Science Central's image as a hub for science and sustainability to try and achieve this objective (interview 31). As such, although the sustainability features in the Core Building are not supported by an explicit financial business case, they do fit within a wider strategy that aims to increase the council's revenue by attracting investment to the area. Indeed, since the project is predicated on

the idea that a further £19m of private sector investment will be forthcoming by 2033 (to complement the £31m of public money that has already been committed), the Science Central partners need to secure these extra occupants in order to make the project viable (interview 11).

As mentioned earlier, the Core Building does contain some notable sustainability features, including rainwater collection, PV panels, natural ventilation and a green wall. In addition, all of the Science Central site will be connected to a district heating system – something that is much less common in the UK than Germany and that can reduce carbon emissions by heating properties more efficiently than distributed networks (Gleeson *et al.* 2011). More bizarrely, the partners dug out and sold the remaining coal from the site before any construction work began, because they calculated that this would be a more sustainable option than relying on more concrete to form stable foundations (interviews 6 and 31). These features are based on the idea that sustainability is “one of the defining principles of the whole project”, and that Science Central would symbolise Newcastle’s aim to be seen as a forward-looking city. Indeed, both the university and the council were keen to promote this image, and were therefore happy to exceed the statutory requirements for the Core Building and wider masterplan (interview 11).

However, the reality is that neither the Core Building nor the district heating system are as ambitious from a sustainability perspective as was initially hoped. One interviewee suspected that much of the initial trumpeting of these features was to try and reinforce the rhetoric of Science Central as a sustainability location in the minds of potential investors, when in fact the reality was less impressive due to the compromises involved between the partners and developer:

We do try to explore as many options for including sustainability measures as we possibly can... [For the Core Building] we’ve looked at everything from hot rocks, no mechanical cooling, photovoltaics, a green wall, and a green roof, but there’s tensions... Sometimes I think we’re just tinkering around the edges, I mean doing stuff that’s visual (interview 6).

Although some of the ideas above were incorporated into the Core Building, others were not. Indeed, even the much-vaunted green wall will only be temporary: it will disappear when an additional building is constructed in an adjacent plot in the future (interview 31), and was only actually proposed as an afterthought to improve the appearance of the building from the road (interview 6). The result is that “the building doesn’t have high sustainability credentials”, which one interviewee feared could jeopardise the overall marketing strategy for Science Central, particularly as it is the first to be completed on the site (interview 13). Another interviewee agreed, pointing out that the potential cost of some solutions was undoubtedly a factor in this decision (interview 31). Indeed, the need to construct the Core Building quickly and relatively cheaply had become the dominant priority, with its sustainability features relegated to a subordinate level. Crucially, the council now hopes the university will take on more responsibility for promoting Science Central as a location for green investment. In particular, it expects the innovations within the SAgE building to shape the future development of the site in terms of energy use and building performance:

Without the uni we wouldn’t be doing things as we are now. There’s a whole range of things going on in this building that will probably make it a game-changer. It will set us apart nationally, and probably internationally as well in certain things, not just “this is something different for Newcastle”: it would be potentially something unique to the whole country (interview 31).

As such, although Newcastle is still keen to adopt state-of-the-art solutions to climate mitigation in the city, it has transferred much of the responsibility for developing (and resourcing) them to the university. The financial constraints within with the council operates are a key reason for this: its budget for the Core Building was £11m, compared

to the university's decision to allocate £50m to the SAgE Building. Although the latter is around three times as large as the council's building, this nonetheless represents a significant disparity in terms of cost per square metre. More pertinently, it suggests that Newcastle's approach can be characterised as preferring "state of the art solutions *by proxy*", since it has successfully managed to offload much of the bill for these innovations onto the university. As discussed earlier, this has involved a significant trade-off in terms of the council's ability to exert its influence, but officers at Newcastle are largely content with such an arrangement (interview 31).

Furthermore, the district heating system was supposed to be sourced from a geothermal borehole, and thereby heated in the same way as Hans-Sachs-Haus in Gelsenkirchen. The partnership was awarded a million pounds from central government to support these investigations, which was announced to great fanfare and placed at the centrepiece of Science Central's narrative as a sustainable location (Trott, 2011; Goddard and Vallance, 2013). This borehole had to be dug to a depth of 1.7km to assess whether the geothermal heat could be piped up to the surface. As such, it was much more difficult from an engineering perspective than the Hans-Sachs-Haus borehole, where drilling could stop only 70m below the surface. However, subsequent testing found that the rock strata in Newcastle was not sufficiently permeable to provide enough hot water for the site and therefore the district heating system will rely on a gas-fired combined heat and power source instead – even biomass has been ruled out (interview 31). Nonetheless, the borehole will continue to be used as a research facility and the council stressed that it would not have even investigated the option had the university not originally suggested it. This also shows how Newcastle preference for state-of-the-art solutions is dependent on them being resourced by the university, and how the university is therefore able to pursue its own objectives through the Science Central partnership.

	Gelsenkirchen	Newcastle
Hierarchy vs engagement	Increasing public engagement in planning decisions, but the council still dominant	Horizontal engagement with flexibility and compromise. Developers more influential
State of the art solutions vs Best Practicable Means	Solutions often state of the art, but they need to pay for themselves over ten years	Sustainable solutions do not require a business case. Climate change leadership has been effectively outsourced to the university

Table 5: Changes in the sub-dimensions of policy styles types as applied to planning in Gelsenkirchen and Newcastle

Table 5 is based on Table 3 earlier in this paper. It illustrates how there is some convergence on both sub-dimensions of policy styles, but the planning approaches of the two cities remain different. For example, although Gelsenkirchen is now more open to public comment and engagement than previously (as evidenced by its charm offensive to maintain support for the Hans-Sachs-Haus and Heinrich-König-Platz projects), the municipality remains the dominant actor and takes decisions fairly autonomously. In particular, developers in Gelsenkirchen are not able to exercise as much influence over decisions as they are in Newcastle, councils are incentivised to agree lower sustainability standards in order to encourage investment in deprived areas. This contrast was illustrated most starkly in the decision-making processes regarding car parking spaces at Hans-Sachs-Haus and the Core Building: Gelsenkirchen council stuck to its principles in the former case, but Newcastle was persuaded by the developer to construct a car park as a way of encouraging external investment in the latter.

These contrasts can be related back directly to the different structural arrangements identified earlier in the paper. For example, the structured planning framework that operates across tiers of government in Germany, along with the strict environmental

standards of the Energy Conservation Act, means that Gelsenkirchen has very little room for manoeuvre to compromise with developers. This contrasts starkly with the poorly-defined definitions of sustainability that exist within the National Planning Policy Framework and the absence of regional standards for local development in England. Notably, both of these characteristics are typical of the respective multi-level governance arrangements that are usually associated with these countries, which suggests that these structural frameworks are key drivers of policy style. Furthermore, the relative strength of the municipality *vis à vis* other societal actors plays a crucial role in the extent to which it can exercise hierarchical authority. Since Gelsenkirchen remains a multi-functional local authority and retained responsibility for the redevelopment of Ebertstraße in-house, it was much better placed to exercise its authority over decision-making. The fragmented nature of local governance in Newcastle, which has meant that various different organisations have assumed some responsibility for the Science Central site at some point over the last ten years, has meant the council has needed to rely on other bodies to implement its policies. This has resulted in a much more horizontal approach to decision-making, because the authority needs to co-ordinate and agree compromises with other bodies in order to increase its capacity. In the case of Science Central, the most obvious other actor is the university.

In terms of the council's preference for "best practicable means" or "state of the art solutions" the picture is somewhat different – but again, it is shaped by the different institutional arrangements that operate within each city. Germany's structured vertical framework of standards requires new or refurbished buildings such as Hans-Sachs-Haus to install advanced sustainability features. Furthermore, its more lucrative system of feed-in-tariffs, which were designed both to reduce dependence on nuclear energy and to encourage the domestic renewables sector to develop highly technical solutions, has allowed small-scale energy producers to achieve a return on their investments over a shorter timeframe. This allows Gelsenkirchen to install high-end technologies in new developments in the knowledge that they will pay for themselves within a decade and thereby remain within the new federal accounting requirements. As such, the council can invest in such solutions in spite of its severe financial pressures. Since this situation encourages the installation of advanced features provides they are supported by such a business case, it can be characterised as neither a preference for state of the art solutions or best practicable means to resolving an environmental problem. Instead, Wurzel's (2002) description of "best available technology not entailing excessive costs" is more appropriate.

The sustainability features in the Core Building include PV panels, rainwater toilet flushing and a green wall into its design. Interestingly, and in contrast to what we might expect from English city, where "best practicable means" might be more prevalent as a guiding principle, the municipality did not even undertake a business benefits assessment before deciding to install these solutions – and the council does not expect them to deliver a financial return. Instead, they were included to symbolise the city's desire to act as a local sustainability leader – something that is much more akin to the idea of preferring state of the art solutions. However, they are considerably more modest than the sustainability features in Hans-Sachs-Haus, and also much less ambitious than Newcastle University's SAgE Building, and therefore the council should not be viewed as being keen to install leading-edge technologies in its new offices. Rather, the university's heavy involvement in the Science City project, and its desire to design buildings as "living laboratories" for green technologies, has essentially enabled the council to divest itself of some responsibility to lead the city in this area. In this way, Newcastle does have a preference for state of the art sustainable technologies, but this is exercised by proxy, rather than through the council directly. Once again, this is a result of the different structural arrangements that operate within the city: Newcastle's weaker position *vis à vis* other actors means that it needs to develop these partnerships in order to increase its capacity for policy implementation. Moreover, with the presence of a

university that is keen to fund sustainability research has provided the council with a very useful partner and “anchor institution” to help further its strategy.

Conclusions

This paper has shown the extent to which planning decisions in Gelsenkirchen and Newcastle, particularly the Ebertstraße and Core Building development projects, are characterised by “typically” German and “English” multi-level governance structures and policy styles. In particular, the contrasting governance structures have shaped the way in which each city has been able to implement its planning policy, with Newcastle council’s position as one of several bodies with responsibility for Science Central meaning that it is much more reliant on other actors than Gelsenkirchen in its plans for Ebertstraße. Similarly, the stricter federal frameworks for vertical planning and energy conservation in Germany means that planning decisions are much less open to negotiation. As a result, decision-making in Newcastle takes place on a more horizontal basis, with developers in particular exercising more influence, whereas Gelsenkirchen is better placed to exercise hierarchical authority.

There is some evidence to suggest that this situation is changing, with Gelsenkirchen’s approach moving towards the traditional English position. For example, the controversy over the Hans-Sachs-Haus redevelopment meant that the council needed to engage more with residents to ensure continued public support for the project, and the council is attempting to persuade (rather than compel) landlords to improve the energy performance of their buildings in return for receiving public money to renovate their facades. These changes are driven by both citizen pressure and the financial and economic situation within the city. However, the highly structured nature of the institutional environment means that the overall approach is very unlikely to change significantly, because the legal context restricts the power of developers to influence decisions and also means that new and refurbished buildings are required by law to install advanced technologies. As such, there would need to be reform at the federal level in order to enable municipalities to compromise on existing sustainability standards. Since the late 1990s the German government has sought to stimulate its green industry sector by insisting that businesses adopt on strict sustainability standards and thereby create the demand for advanced solutions. This active market approach has reaped dividends (Mendonca *et al.*, 2010) and therefore it is unlikely that such changes will be forthcoming.

Although there has been a recent push for greater autonomy for local government in England, it is also unlikely that Newcastle’s approach to planning and climate change will change much in the foreseeable future. The UK government has been much more reluctant to insist on strict sustainability criteria in planning developments, and northern cities remain economically behind much of the south – which increases the incentive for councils to compromise with developers. Councils and local businesses are seeking to create regional bodies from the bottom-up (in the form of Local Enterprise Partnerships), but they will not set out the kind of detailed planning requirements that featured in Regional Spatial Strategies. Therefore, barring change at the national level that would tighten up sustainability requirements for planning applications, local government will still be involved in a race to the bottom to attract investment. A recent ministerial announcement that half of England will be available for fracking (and it could potentially be permitted in national parks or areas of outstanding natural beauty (Mason, 2014)) suggest that stricter national standards are unlikely to emerge.

As a result, English councils that wish to promote themselves as sustainability leaders need to work horizontally with other actors in order to increase their capacity. In response to this situation, Newcastle has partnered closely with one of its universities in the Science Central project and managed to promote the adoption of state of the art environmental technologies by proxy: the SAgE Building will be significantly more

advanced in this respect than the Core Building. Although this does suggest that the council is able to achieve its objectives through such a partnership, the university's influence undoubtedly means that the high-profile sustainability features within the site are geared primarily towards meeting its research objectives, rather than projecting an image of the council as a cutting-edge, environmentally-friendly organisation.

- Adonis, A. (2014) *Mending the Fractured Economy: Smarter State, Better Jobs - An Independent Review for the Labour Party*. London. [Online]. Available at: <http://www.policy-network.net/publications/4695/Mending-the-Fractured-Economy> (Accessed: 7 July 2014).
- Bank, W. (2010) *Cities and Climate: Change: An Urgent Agenda*. Washington: World Bank.
- Bechtel, M. M. and Urpelainen, J. (2014) 'All Policies Are Glocal: International Environmental Policy Making with Strategic Subnational Governments', *British Journal of Political Science*, pp. 1-24.
- Bodansky, D. (2006) 'The International Climate Change Regime', *Advances in the Economics of Environmental Resources*, 5, pp. 147-180.
- Bückmann, W. and Oel, H.-U. (1981) *Bürgerbeteiligung bei kommunalen Planungen*. Munich: Minerva.
- Bulkeley, H. and Betsill, M. (2003) *Cities and climate change : urban sustainability and global environmental governance*. New York: Routledge.
- Bulkeley, H. and Betsill, M. M. (2005) 'Rethinking sustainable cities: Multilevel governance and the 'urban' politics of climate change', *Environmental Politics*, 14(1), pp. 42-63.
- Committee, C. a. L. G. (2014) *Devolution in England: The Case for Local Government*. London. [Online]. Available at: <http://www.publications.parliament.uk/pa/cm201415/cmselect/cmcomloc/503/503.pdf> (Accessed: 10 July 2014).
- Council, N. C. (2014) *Newcastle Local Plan Annual Monitoring Report*. Newcastle upon Tyne. [Online]. Available at: https://www.newcastle.gov.uk/sites/drupalncc.newcastle.gov.uk/files/wwwfileroot/planning-and-buildings/planning-policy/amr_2012_13_-_final.pdf (Accessed: 24 July 2014).
- Dahme, H.-J. and Wohlfahrt, N. (2003) 'Verwaltungsaufbau in Nordrhein-Westfalen', in Grunow, D. (ed.) *Verwaltung in Nordrhein-Westfalen: Zwischen Ärmelschoner und e-Government*. Münster: Aschendorff.
- Diekmann, F., Kröger, M. and Reimann, A. (2013) 'Disastrous Public Works Projects: A History of Political Deception in Germany', *Spiegel Online*, January 10.
- Dolowitz, D. P. and Marsh, D. (2000) 'Learning from Abroad: The Role of Policy Transfer in Contemporary Policy-Making', *Governance: A Journal of Policy, Administration and Institutions*, 13(1), pp. 5-24.
- Dunleavy, P. and Margetts, H. (2006) 'New Public Management Is Dead—Long Live Digital-Era Governance', *Journal of Public Administration Research and Theory*, 16(3), pp. 467-494.
- Edwards, R. and Vaughan, A. (2012) 'Q&A: Feed-in tariffs', *The Guardian* (edn). [Online] Available at: <http://www.theguardian.com/environment/2010/apr/30/feed-in-tariff> (Accessed: 21 August 2014).
- EnergieAgentur (2008) *Aufruf zur Bewerbung um Fördermittel für die energetische Erneuerung von Gebäuden der sozialen Infrastruktur in den Kommunen (Investitionspakt Bund-Länder-Gemeinden NRW)*. Wuppertal: EnergieAgentur Nordrhein-Westfalen.
- Ferry, L., Coombs, H. and Eckersley, P. (2015) 'Budgetary stewardship, innovation and working culture: Identifying the missing ingredient in English and Welsh local authorities' recipes for austerity management', *Financial Accountability and Management*, 35.
- Ford, C. (2013) 'Newcastle University unveil £50m investment into Science Central', *The Journal* (edn). [Online] Available at: <http://www.thejournal.co.uk/business/business-news/newcastle-university-unveil-50m-investment-6394506> (Accessed: 11 July 2014).
- Goddard, J. and Vallance, P. (2013) *The University and the City*. London: Routledge.

- Government, D. f. C. a. L. (2012) *National Planning Policy Framework*. London: The Stationery Office. [Online]. Available at: <https://www.gov.uk/government/publications/national-planning-policy-framework--2> (Accessed: 17 July 2014).
- Grunow, D. (2003) 'Der Ansatz der politikfeldbezogenen Verwaltungsanalyse', in Grunow, D. (ed.) *Verwaltungshandeln in Politikfeldern*. Opladen: Leske & Budrich.
- Hanf, K. and Jansen, A.-I. (1998) 'Environmental Policy – the outcome of strategic action and institutional characteristics', in Hanf, K. and Jansen, A.-I. (eds.) *Governance and Environment in Western Europe: Politics, Policy and Administration*. New York: Addison Wesley Longman.
- Hans-Sachs-Haus, B. (2006) *Die Petition*. Available at: <http://www.buergerforum-hans-sachs-haus.de/index.php?wahl=petition> (Accessed: 8 July).
- Heidenreich, S. (2008) *Englisch für Architekten und Bauingenieure — English for Architects and Civil Engineers*. Wiesbaden: Vieweg und Teubner.
- Héritier, A. and Lehmkuhl, D. (2011) 'Governing in the shadow of hierarchy: New modes of governance in regulation', in Heritier, A. and Rhodes, M. (eds.) *New modes of governance in Europe: Governing in the shadow of hierarchy*. Basingstoke: Macmillan.
- Héritier, A., Mingers, S., Knill, C. and Becka, M. (1994) *Die Veränderung von Staatlichkeit in Europa: Ein regulativer Wettbewerb - Deutschland, Großbritannien und Frankreich in der Europäischen Union*. Opladen: Leske & Budrich.
- Herschel, T. and Newman, P. (2002) *Governance of Europe's City Regions*. Routledge.
- Heseltine, M. (2012) *No stone unturned: In pursuit of growth*. London. [Online]. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/34648/12-1213-no-stone-unturned-in-pursuit-of-growth.pdf (Accessed: 23 January 2014).
- Hetherington, P. (2011) 'We need more homes, not baffling desperation', *Guardian* (edn), 14 September. [Online] Available at: <http://www.theguardian.com/society/joepublic/2011/sep/14/national-planning-policy-framework-confusion-housing1?CMP=EMCSOCEML657> (Accessed: 16 September 2011).
- Hooghe, L. and Marks, G. (2003) 'Unraveling the central state, but how? Types of multi-level governance', *American Political Science Review*, 97(2), pp. 233-243.
- Howe, G. (1990) 'Sovereignty and Interdependence: Britain's Place in the World', *International Affairs* 60(4), pp. 675-695.
- Jänicke, M. and Weidner, H. (1997) 'Germany', in Jänicke, M. and Weidner, H. (eds.) *National environmental policies: a comparative study of capacity-building*. Berlin: Springer-Verlag.
- Jessop, B. (2002) 'Governance and meta-governance in the face of complexity: On the roles of requisite variety, reflexive observation and romantic irony in participatory governance', in Heinelt, H., Getimis, P., Kafkalas, G., Smith, R. and Swyngedouw, E. (eds.) *Participatory Governance in a Multi-Level Context: Concepts and Experience*. Opladen: Leske & Budrich.
- Jones, G. and Stewart, J. (1983) *The Case for Local Government*. London: Allen and Unwin.
- Journal, T. (2014) 'Tallest living wall in England pops up in Newcastle's Science Central', *The Journal* (edn), 8 July. [Online] Available at: <http://www.thejournal.co.uk/news/north-east-news/tallest-living-wall-england-pops-7389929> (Accessed: 24 July 2014).
- Jung, W., Hards, A. and Schröder, W. (2010) 'From industrial area to solar area - the redevelopment of brownfields and old building stock with clean energies', in van Staden, M. and Musco, F. (eds.) *Local Governments and Climate Change: Sustainable Energy Planning and Implementation in Small and Medium Sized Communities*. Heidelberg: Springer.
- Knill, C. and Lenschow, A. (1998) 'Coping with Europe: the impact of British and German administrations on the implementation of EU environmental policy', *Journal of European Public Policy* 5(4), pp. 595-614.
- Kooiman, J. (2003) *Governing as Governance*. London: Sage.
- Lazarus, R. J. (2009) 'Super wicked problems and climate change: Restraining the present to liberate the future', *Cornell Law Review*, 94(5), pp. 1153-1233.

- Lowndes, V. and Pratchett, L. (2012) 'Local Governance under the Coalition Government: Austerity, Localism and the 'Big Society'', *Local Government Studies*, 38(1), pp. 21-40.
- Lütkenhorst, W. and Pegels, A. (2014) *Germany's Green Industrial Policy - Stable Policies – Turbulent Markets: The costs and benefits of promoting solar PV and wind energy*. Geneva: Development, I. I. f. S. [Online]. Available at: http://www.iisd.org/gsi/sites/default/files/rens_gip_germany.pdf (Accessed: 21 July 2014).
- Marks, G. (1993) 'Structural Policy and Multi-level Governance in the EC', in Cafruny, A. and Rosenthal, G. (eds.) *The State of the European Community*. London: Longman.
- Mason, R. (2014) 'Fracking push gets go-ahead across UK as ministers tighten safeguards', *The Guardian* (edn), 28 July 2014. [Online] Available at: <http://www.theguardian.com/environment/2014/jul/28/fracking-expansion-uk-drilling-national-parks-safeguards> (Accessed: 28 July 2014).
- Mayntz, R. (2009) *Der moderne Staat - Idee und Wirklichkeit*. Münster: Aschendorff.
- Mendonca, M., Jacobs, D. and Sovacool, B. (2010) *Powering the Green Economy: The feed-in tariff handbook*. London: Earthscan.
- Nilsson, M., Eckerberg, K. and Persson, A. (2009) 'Introduction: EPI agendas and policy responses', in Nilsson, M. and Eckerberg, K. (eds.) *Environmental Policy Integration in Practice: Shaping institutions for learning*. London: Earthscan.
- Oxley, M., Brown, T., Nadin, V., Qu, L., Tummers, L. and Fernández-Maldonado, A. M. (2009) *Review of European Planning Systems*. Leicester. [Online]. Available at: <https://www.dora.dmu.ac.uk/bitstream/handle/2086/7536/NHPAU%20Planning.pdf?sequence=1> (Accessed: 25 July 2014).
- Pearson, A. (2011) 'Hopes hit as regeneration group 1NG is axed', *Evening Chronicle* (edn), 29 September. [Online] Available at: <http://www.chroniclive.co.uk/news/north-east-news/hopes-hit-regeneration-group-1ng-1404984> (Accessed: 21 July 2014).
- Pehle, H. and Jansen, A.-I. (1998) 'Germany: The engine in European environmental policy?', in Hanf, K. and Jansen, A.-I. (eds.) *Governance and Environment in Western Europe: Politics, Policy and Administration*. New York: Addison Wesley Longman.
- Power, A. and Zulauf, M. (2011) *Cutting Carbon Costs: Learning from Germany's Energy Saving Program*. London. [Online]. Available at: <http://sticerd.lse.ac.uk/dps/case/cp/CCCfull.pdf> (Accessed: 11 July 2014).
- Rhodes, R., A. W. (1997) *Understanding governance: policy networks, governance, reflexivity and accountability* Bristol: Open University Press.
- Richardson, J. (ed.) (1982) *Policy Styles in Western Europe*. London: Allen & Unwin.
- Rittel, H., W.J and Webber, M., M. (1973) 'Dilemmas in a General Theory of Planning', *Policy Sciences*, 4, pp. 155–169.
- Scharpf, F. W., Reissert, B. and Schnabel, F. (eds.) (1976) *Politikverflechtung: Theorie und Empirie des kooperativen Föderalismus in der Bundesrepublik*. Kronberg: Scriptor.
- Schmidt, S. and Buehler, R. (2007) 'The Planning Process in the US and Germany: A Comparative Analysis', *International Planning Studies*, 12(1), pp. 55-75.
- Smith, A. (2003) 'Multi-Level Governance: What it is and how it can be studied', in Peters, B. G. and Pierre, J. (eds.) *Handbook of Public Administration*. London: Sage.
- Stoker, G. (2006) 'Public Value Management: A New Narrative for Networked Governance?', *American Review of Public Administration*, 36(1), pp. 41-57.
- Trott, F. (2011) *Newcastle University borehole project strikes hot water*. Available at: <http://www.bbc.co.uk/news/uk-england-tyne-13914718> (Accessed: 24 July).
- University, N. (2014) *Institute for Sustainability - About Us*. Available at: <http://www.ncl.ac.uk/sustainability/about/> (Accessed: 11 July).
- Verkehr, M. f. B. u. (2008) *Richtlinien über die Gewährung von Zuwendungen zur Förderung von Maßnahmen zur Stadtentwicklung und Stadterneuerung*. Düsseldorf. [Online]. Available at:

https://recht.nrw.de/lmi/owa/br_bes_text?anw_nr=1&gld_nr=2&ugl_nr=2313&bes_id=12565&val=12565&ver=7&sg=0&aufgehoben=N&menu=0 (Accessed: 15 July 2014).

Weale, A. (1997) 'United Kingdom', in Jaenicke, M. and Weidner, H. (eds.) *National environmental policies: a comparative study of capacity-building*. Berlin: Springer-Verlag.

Weale, A., O'Riordan, T. and Kramme, L. (1991) *Controlling Pollution in the Round: Change and choice in environmental regulation in Britain and West Germany*. London: Anglo-German Foundation.

Webber, C. (2008) *Innovation, Science and the City*. London. [Online]. Available at: <http://www.centreforcities.org/assets/files/Innovation,%20science%20and%20the%20city.pdf> (Accessed: 11 July 2014).

Wurzel, R. K. W. (2002) *Environmental policy-making in Britain, Germany and the European Union*. Manchester: Manchester University Press.

Young, R., Hayes, S., Kelly, M., Vaidyanathan, S., Kwatra, S., Cluett, R. and Herndon, G. (2014) *2014 International Energy Efficiency Scorecard*. Washington, D. C. [Online]. Available at: <http://www.aceee.org/research-report/e1402> (Accessed: 18 July 2014).